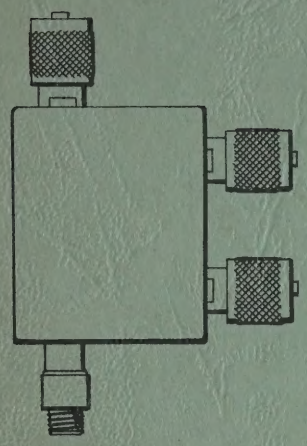
Volume 12 Index page
Volume 13 Index page 38



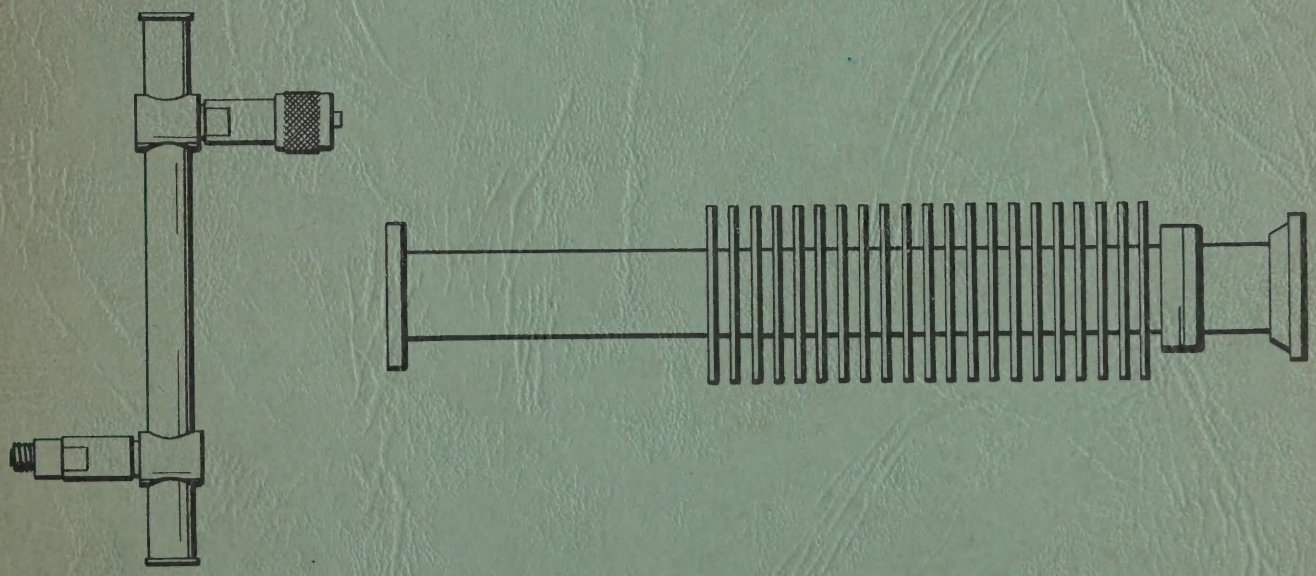
Electrical & Electronic

TEST EQUIPMENT DATA HANDBOOK

VOLUMES 12 & 13

12 PASSIVE NETWORKS

13 STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT



FREDERICK RESEARCH CORPORATION

FRC

ELECTRICAL & ELECTRONIC

TEST EQUIPMENT DATA HANDBOOK

VOLUMES 12 & 13

12 PASSIVE NETWORKS

13 STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

FREDERICK RESEARCH CORPORATION
2601 UNIVERSITY BOULEVARD, WEST
WHEATON, MARYLAND

TO THE USERS OF THIS HANDBOOK:

In recognition of the many problems associated with the selection of electrical-electronic test equipment for specific applications, Frederick Research Corporation has compiled a series of volumes which contain test equipment descriptions. The items described in the volumes are primarily those used by government agencies and contractors. At the request of the government, and in the interest of providing users with the desired information without the necessity of costly search and compilation, this firm has made this unclassified data available to government agencies and contractors for many years.

The United States Senate has twice cited the Frederick Research Corporation in the Congressional Record (1955 and 1960) for its achievements in efforts to save the government millions of dollars by avoiding duplication in government purchases and promoting the development and utilization of the best test equipment at the lowest cost consistent with quality. We believe that the material in these volumes should provide a means for users to review their test equipment requirements with a minimum expenditure of funds and technical man-hours.

FREDERICK RESEARCH CORPORATION

AIDS TO USE OF THE VOLUMES

This series of volumes has been prepared for the purpose of aiding engineers and other personnel in the selection of electrical-electronic test equipment to satisfy numerous test requirements. Thus, the format of the descriptive sheets has been specifically designed to provide the concise equipment data necessary for the selection procedure - functional description, electromechanical characteristics, reference source data, and other pertinent information. All data is as complete and current as the information available at the time the equipment description was prepared.

To save the maximum amount of time and to facilitate easy location of a particular item, the complete series has been divided into volumes based upon the accepted functional classification of equipment types. Thus, all equipments performing a specific type of test, monitoring, or measurement function are contained in one volume. For example, all equipments performing Voltage and Current Measuring functions are contained in Volume 1. Where the number of equipment descriptions in a particular class is insufficient to warrant an entire book, more than one volume (class) of equipment descriptions may be included in one book. For example, Volumes 5, 6, 7, 8 and 9 are contained in one book. The volumes are separated by green divider sheets.

Conversely, where the number of equipment descriptions is so large that a single book would be cumbersome, the volume will consist of two or more parts. For instance, Volume 10 is sufficiently large to warrant its division into parts.

Within each functional class and its subclasses, the descriptive sheets are arranged in alpha-numerical order based upon the equipment designation, e.g., ME-6B/U, ME-6D/U, ME-30/U, TS-375/U, and similarly until all descriptions in one particular class are covered.

The definitions and index of the functional classification categories and subclassifications will be found on the following pages. The alpha-numerical arrangement is provided to aid the user in his search for items in the event that only item nomenclature is known.

As an example of use of the Handbook, assume specific test requirements arise which dictate the use of a vacuum tube voltmeter (VTVM). To determine if there is an equipment having the necessary characteristics, locate the List of Handbook Volumes on Page iii in any

6

of the Handbook volumes and note that voltage and current measuring equipments are located in Volume 1.

In Volume 1 turn to the Electronics Test Equipment Functional Classifications to find the functional class under which VTVM's appear. From the listing, it is seen that voltage measuring equipments are assigned the functional class of 1.1 and that VTVM's are most likely included in the subclass 1.1.1 Electronic Voltmeter. A check of the functional class definitions provided on Page vii will verify this.

Next, turn to the yellow divider, 1.1 Voltage Measuring Equipment, and proceed in that section to the equipment descriptions assigned the functional class 1.1.1. All VTVM descriptions will appear in alpha-numerical order within this section. Alpha-numerical listings of equipment descriptions within each subclass are provided in the Table of Contents.

Data on specific pieces of test equipment may also be quickly located. For instance, assume that one wanted to look up the characteristics of the ME-6D/U Electronic Multimeter. First, locate the correct volume as in the above example, which in this case is again Volume 1. In Volume 1 refer to the Alpha-Numerical Index, locate the item and note its functional class as being 1.1.1. Next, turn to the yellow divider 1.1 Voltage Measuring Equipment and proceed in that section to the descriptions assigned the functional class 1.1.1. The ME-6D/U is placed alpha-numerically in this class, physically located between the ME-6B/U and the ME-30/U.

A standard data format is used throughout the Handbook. Once the user has become familiar with this format, he will find it easy to locate specific data on a given instrument as well as convenient for the comparison of several instruments.

LIST OF HANDBOOK VOLUMES

Title	Volume
Voltage and Current Measuring Equipment	1
Frequency Measuring Equipment	2
Waveform Measuring and/or Analyzing Equipment	3
Signal Generating Equipment	4
Field Strength and Intensity Measuring Equipment	5
Impedance and Standing Wave Ratio Measuring Equipment	6
Active Networks for Test Purposes	7
Time Measuring and Counting Equipment	8
Nuclear Energy Test and Measuring Equipment	9
Multifunction Test and Measuring Equipment	10
Associated Devices for Test and Measuring Equipment	11
Passive Networks for Test Purposes	12
Standards and Calibration Equipment for Test and Measuring Equipment	13
Power and Energy Measuring Equipment	14
Temperature Indicating, Measuring, and Recording Equipment	15
Stress, Strain and Flaw Detecting and Measuring Equipment	16
Gas and/or Liquid Measuring and Analyzing Equipment	17
Kinematic Test and Measuring Equipment	18
Optical Testing, Measuring and Aligning Equipment	19

8

9

ELECTRICAL & ELECTRONIC

TEST EQUIPMENT DATA HANDBOOK

VOLUME 12

12

PASSIVE NETWORKS

FREDERICK RESEARCH CORPORATION
2601 UNIVERSITY BOULEVARD, WEST
WHEATON, MARYLAND

10

ELECTRICAL & ELECTRONIC

TEST EQUIPMENT DATA HANDBOOK

VOLUME 12

12

PASSIVE NETWORKS

FREDERICK RESEARCH CORPORATION
2601 UNIVERSITY BOULEVARD, WEST
WHEATON, MARYLAND

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION

12. PASSIVE NETWORKS -- FOR TEST PURPOSES

- 12.1 Lumped Constant Elements
  - 12.1.1 Variable and Decade Resistor
  - 12.1.2 Variable and Decade Inductor
  - 12.1.3 Variable and Decade Capacitor
  - 12.1.4 Transformer and Autotransformer
- 12.2 Lumped Constant Network
  - 12.2.1 Attenuator
  - 12.2.2 Shunt or Multiplier
  - 12.2.3 Voltage Divider
  - 12.2.4 Filter
  - 12.2.5 Delay Line
- 12.3 Distributed Network
  - 12.3.1 Termination
  - 12.3.2 Attenuator
  - 12.3.3 Filter
  - 12.3.4 Transmission Line Matching Network
  - 12.3.5 Transmission Line Junction
  - 12.3.6 Transmission Line Switch
  - 12.3.7 Delay Line
- 12.4 Passive Mixer and/or Modulator

14

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION - DEFINITIONS

12. PASSIVE NETWORKS--FOR TEST PURPOSES

Electrical-electronics components or the interconnection of electrical-electronics components which do not require a local source of power for proper operation.

12.1 LUMPED CONSTANT ELEMENTS

Distinct electrical equipments, small compared to a wavelength, which are calibrated and used in the control of voltage and current, and employed in conjunction with other electrical-electronic equipment.

12.1.1 VARIABLE AND DECADE RESISTOR

A device which may consist of a continuously variable calibrated resistance, or a set of precision resistors whose resistive values are integral multiples and/or powers of ten, with a means of selecting any desired value within the range of the instrument.

12.1.2 VARIABLE AND DECADE INDUCTOR

A device which may consist of a continuously variable calibrated inductance, or a set of precision inductors whose inductive values are integral multiples and/or powers of ten, with a means of selecting any desired value within the range of the instrument.

12.1.3 VARIABLE AND DECADE CAPACITOR

A device which may consist of a continuously variable calibrated capacitor, or a set of precision capacitors whose capacitive values are integral multiples and/or powers of ten, with a means of selecting any desired value within the range of the instrument.

12.1.4 TRANSFORMER AND AUTOTRANSFORMER

A device designed to increase or decrease voltage or current by means of primary and secondary coils. In the autotransformer, one coil comprises both primary and secondary circuits.

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION - DEFINITIONS

12.2 LUMPED CONSTANT NETWORK

An interconnection of two or more lumped constant elements, which are calibrated and used in conjunction with other electrical-electronic equipment.

12.2.1 ATTENUATOR

An adjustable resistive network for reducing the amplitude of an electrical signal without introducing appreciable phase or frequency distortion.

12.2.2 SHUNT OR MULTIPLIER

A network consisting of one or more resistive elements used in parallel or series with a meter to increase its current or voltage range.

12.2.3 VOLTAGE DIVIDER

A network used for the purpose of tapping off a fractional part of the electrical potential difference existing between its input terminals.

12.2.4 FILTER

A network employing lumped constant elements, used to select or reject signals in predetermined frequency ranges.

12.2.5 DELAY LINE

A network employing lumped constant elements which provides a predetermined delay in time for the passage of a signal from the input to the output.

12.3 DISTRIBUTED NETWORK

An electrical-electronic device which depends upon physical size in comparison to a wavelength and physical configuration for proper operation.

12.3.1 TERMINATION

A distributed network which provides a means of absorbing power incident upon it, without appreciable reflection, or provides a means of terminating a transmission line in its specific impedance.

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION - DEFINITIONS

12.3.2 ATTENUATOR

A distributed network used to absorb part of a signal, and transmit the remainder with a minimum of distrotion or delay.

12.3.3 FILTER

A distributed network used to select or reject signals in predetermined frequency ranges.

12.3.4 TRANSMISSION LINE MATCHING NETWORK

A distributed network used to transform impedances in a transmission line, without the insertion of appreciable attenuation.

12.3.5 TRANSMISSION LINE JUNCTION

Any connection of three or more transmission lines used to control the coupling of electromagnetic energy among the several arms.

12.3.6 TRANSMISSION LINE SWITCH

A device capable of transferring electromagnetic energy from one circuit to two or more additional circuits, while providing a suitable degree of isolation to the remaining uncoupled circuits.

12.3.7 DELAY LINE

A distributed network which provides a predetermined delay in time for the passage of signals from the input to the output. The network need not consist of electrical components exclusively, but may employ transducers, and an acoustic medium.

12.4 PASSIVE MIXER AND/OR MODULATOR

A device employing nonlinear elements used to mix two signals, or to modulate one by another, to produce frequencies in addition to those supplied to the device.

TABLE OF CONTENTS

Functional Classification	Designation	Name	Page
12.	PASSIVE NETWORKS--FOR TEST PURPOSES		
12.1	LUMPED CONSTANT ELEMENTS		
12.1.1	TS-578B/U	Decade Resistor	37
12.1.1	General Radio 1432-M	Decade Resistor	39
12.1.1	General Radio 1432-N	Decade Resistor	43
12.1.1	General Radio 1432-P	Decade Resistor	47
12.1.1	Leeds and Northrup 4747	AC Resistor, Adjustable	51
12.1.1	Leeds and Northrup 4749	AC Resistor, Adjustable	53
12.1.2	BC-306-A	Antenna Tuning Unit	55
12.1.2	General Radio 1490-D	Decade Inductor	57
12.1.3	TS-671/U	Decade Capacitor	61
12.1.3	TS-842/G	Capacitance Decade	63
12.1.3	Cornell-Dubilier CDA-5	Decade Capacitor	65
12.1.3	Cornell-Dubilier CDB-3	Decade Capacitor	67
12.1.3	Cornell-Dubilier CDC-3	Decade Capacitor	69
12.1.3	General Radio 219M	Decade Condenser	71
12.1.3	Leeds and Northrup 1091	Decade Capacitor, Mica	73
12.1.4	CN-16A/U	Transformer	75
12.1.4	MC-385-D	Headset Adapter	77
12.1.4	General Radio M2	Variac, Autotransformer	79

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name
12.1.4	General Radio V-10G3	Variable Autotransformer 81
12.1.4	General Radio V-10MT	Variable Autotransformer 83
12.1.4	General Radio V-20M	Variable Autotransformer 85
12.1.4	General Radio W5M	Variac, Autotransformer 87
12.1.4	Gertsch ST-100	Bridge Transformer 89
12.1.4	Sperry T-101029	Transformer, General Purpose 91
12.1.4	Superior Electric S16039	Transformer, Variable 93
12.2	LUMPED CONSTANT NETWORKS	
12.2.1	CN-45/UP	Attenuator 97
12.2.1	TS-402A/U	Attenuator 99
12.2.1	Daven H-693	Attenuator Network 101
12.2.1	Daven RFB-540-73, 541-73, 542-73	Step Attenuator 103
12.2.1	Daven 6800	Attenuator Network Matching Pads 105
12.2.1	General Radio 546-C	Microvolter, Audio-Frequency 107
12.2.1	General Radio 1450TA	Decade Attenuator 111
12.2.1	Hewlett-Packard 350A	Attenuator Set 113
12.2.1	Kay 20	Step Attenuator 115
12.2.2	Ballantine 402A	Multiplier 117
12.2.2	Ballantine 402B	Multiplier 119
12.2.3	AN/UPM-18	Radar Test Set 121
12.2.3	DA-67/U	Dummy Load, Electrical 125
12.2.3	I-99	Test Unit 127
12.2.3	TS-89/AP	Voltage Divider 129
12.2.3	TS-89A/AP	Voltage Divider 131

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name	
12.2.3	TS-89B/AP	Voltage Divider	133
12.2.3	TS-98/AP	Voltage Divider	135
12.2.3	TS-265/UP	Voltage Divider	137
12.2.3	TS-359A/U	Voltage Divider	139
12.2.3	TS-453/U	Voltage Divider	141
12.2.3	Daven 187	Decade Voltage Divider	143
12.2.3	General Radio 1454-A	Decade Voltage Divider	145
12.2.3	Gertsch RT-5	AC Voltage Divider	147
12.2.3	Gertsch RT-9	AC Voltage Divider	149
12.2.3	Helipot T-10	Linear Variable Resistance	151
12.2.3	Helipot T-10A	Linear Variable Resistance	153
12.2.4	Eclipse-Pioneer 13656-1-A	Bandpass Filter	155
12.2.4	General Radio 830-E	Filter, Low Pass	157
12.3	DISTRIBUTED NETWORKS		
12.3.1	A-28	Antenna	161
12.3.1	A-58	Antenna	163
12.3.1	A-98	Antenna	165
12.3.1	AN/UPM-50	Electrical Dummy Load	167
12.3.1	AN/URM-59	Electrical Dummy Load	169
12.3.1	AN/URM-62	Electrical Dummy Load	173
12.3.1	AN/URM-63	Electrical Dummy Load	175
12.3.1	AN/URM-68	Electrical Dummy Load	177
12.3.1	AN/USM-40	Electrical Dummy Load	179
12.3.1	CW-224/U	Antenna Shield	181
12.3.1	DA-2/UP	Dummy Load	183
12.3.1	DA-3/UP	Dummy Load	185

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name
12. 3. 1	DA-4/UP	Dummy Load 187
12. 3. 1	DA-7/UP	Dummy Load 189
12. 3. 1	DA-8/UP	Dummy Load 191
12. 3. 1	DA-9/UP	Dummy Load 193
12. 3. 1	DA-10/UP	Dummy Load 195
12. 3. 1	DA-11/UP	Dummy Load 197
12. 3. 1	DA-18/U	Dummy Load 199
12. 3. 1	DA-19/U	Dummy Load 201
12. 3. 1	DA-20/U	Dummy Load 203
12. 3. 1	DA-21/U	Dummy Load 205
12. 3. 1	DA-22/U	Dummy Load 207
12. 3. 1	DA-23/U	Dummy Load 209
12. 3. 1	DA-24/U	Dummy Load 211
12. 3. 1	DA-25/U	Dummy Load 213
12. 3. 1	DA-26/U	Dummy Load 215
12. 3. 1	DA-27/U	Dummy Load 217
12. 3. 1	DA-28/U	Dummy Load 219
12. 3. 1	DA-29/U	Dummy Load 221
12. 3. 1	DA-32/U	Dummy Load 223
12. 3. 1	DA-37/U	Dummy Load 225
12. 3. 1	DA-45/UP	Dummy Load 227
12. 3. 1	DA-51/U	Electrical Dummy Load 229
12. 3. 1	DA-53/U	Electrical Dummy Load 231
12. 3. 1	DA-56/U	Dummy Load, Electrical 233
12. 3. 1	DA-64(XE)/UP	Electrical Dummy Load 235
12. 3. 1	DA-68/U	Electrical Load Dummy 239
12. 3. 1	DA-96/U	Electrical Dummy Load 241

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name	
12. 3. 1	DA-144/U	Dummy Load, Electrical	243
12. 3. 1	DA-145/U	Dummy Load, Electrical	245
12. 3. 1	DA-146/U	Dummy Load, Electrical	247
12. 3. 1	DA-147/U	Dummy Load, Electrical	249
12. 3. 1	DA-148/U	Dummy Load, Electrical	251
12. 3. 1	DA-149/U	Dummy Load, Electrical	253
12. 3. 1	TS-74/UPM	Phantom Antenna and Attenuator	255
12. 3. 1	TS-90/AP	Dummy Load	259
12. 3. 1	TS-90A/AP	Dummy Load	261
12. 3. 1	TS-101/AP	Test Load Unit	263
12. 3. 1	TS-108/AP	RF Test Load	265
12. 3. 1	TS-208/MPM	Dummy Antenna	267
12. 3. 1	TS-234/UP	Dummy Load	269
12. 3. 1	TS-234A/UP	Dummy Load	271
12. 3. 1	TS-235/UP	Dummy Antenna	273
12. 3. 1	TS-253/AP	Dummy Load	275
12. 3. 1	TS-279/UPM	Dummy Load	277
12. 3. 1	TS-329/U	Dummy Antenna	279
12. 3. 1	TS-338/UP	Dummy Load	281
12. 3. 1	TS-346/UP	Test Load	283
12. 3. 1	TS-366A/TPS-10	Dummy Load	285
12. 3. 1	TS-366B/TPS-10	Dummy Load	287
12. 3. 1	14ACN	Dummy Load	289
12. 3. 1	Bird 80-F	Termaline Coaxial Load Resistor	291
12. 3. 1	Bird 82	Termaline Coaxial Load Resistor	293

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name
12.3.1	General Radio 874-WM	Termination, Coaxial 295
12.3.1	Sierra 160-20M-50	Termination, Coaxial 297
12.3.1	Sperry 242	Dummy Load 299
12.3.2	CN-29/UP	Attenuator 301
12.3.2	CN-32/U	Attenuator 303
12.3.2	CN-34/U	Attenuator 305
12.3.2	CN-42/UP	Attenuator 307
12.3.2	CN-110/U	Attenuator 309
12.3.2	CN-168A/U	Attenuator 311
12.3.2	CN-169A/U	Fixed Attenuator 313
12.3.2	General Radio 874-GA	Attenuator, Coaxial 315
12.3.2	General Radio 874-G10	Attenuator, Coaxial 319
12.3.2	Microwave 611	Attenuator, Variable Waveguide 321
12.3.2	Polytechnic 130-B	Attenuator 323
12.3.3	AN/URM-60	Directional Coupler 325
12.3.3	Hewlett-Packard 360-A	Filter, Low Pass 327
12.3.4	BC-1201-A	Diode Coupling Head 329
12.3.5	CU-79/UP	Directional Coupler 331
12.3.5	CU-225/U	Directional Coupler 333
12.3.5	M-358	Adapter 335
12.3.5	UG-28A/U	Radio Frequency Adapter 337
12.3.5	UG-107B/U	Radio Frequency Adapter 339
12.3.5	UG-196/U	Adapter 341
12.3.5	UG-274A/U	Adapter 343
12.3.5	Sierra 137A	Coupler, Directional Wideband 345

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name	
12.3.5	Sierra 138A	Coupler, Directional Wideband	347
12.3.5	Sierra 150A	Coupler, Directional Wideband	349
12.3.5	Sperry 209	Directional Coupler	351
12.3.5	Sperry 237	Directional Coupler	353
12.3.5	Sperry 306	Directional Coupler	355
12.3.5	Sperry 322	Directional Coupler	357
12.3.5	Sperry 467-20	Coupler, Directional Coaxial	359
12.3.6	SA-489/U	Switch, Waveguide	361
12.3.6	SA-509/U	Switch, Waveguide	363
12.3.6	SA-511/U	Switch, Waveguide	365
12.3.6	SA-512/U	Switch, Waveguide	367
12.3.7	MX-1381/APM-66	Delay Line	369
12.4	PASSIVE MIXERS AND/OR MODULATORS		
12.4	CV-52/U	Mixer	373
12.4	General Radio 1000-P6	Crystal Diode Modulator	375

ALPHA-NUMERICAL INDEX

Designation	Name	Functional Classification
A-28	Antenna	12.3.1
A-58	Antenna	12.3.1
A-98	Antenna	12.3.1
AN/UPM-18	Radar Test Set	12.2.3
AN/UPM-50	Electrical Dummy Load	12.3.1
AN/URM-59	Electrical Dummy Load	12.3.1
AN/URM-60	Directional Coupler	12.3.3
AN/URM-62	Electrical Dummy Load	12.3.1
AN/URM-63	Electrical Dummy Load	12.3.1
AN/URM-68	Electrical Dummy Load	12.3.1
AN/USM-40	Electrical Dummy Load	12.3.1
BC-306-A	Antenna Tuning Unit	12.1.2
BC-1201-A	Diode Coupling Head	12.3.4
CN-16A/U	Transformer	12.1.4
CN-29/UP	Attenuator	12.3.2
CN-32/U	Attenuator	12.3.2
CN-34/U	Attenuator	12.3.2
CN-42/UP	Attenuator	12.3.2
CN-45/UP	Attenuator	12.2.1
CN-110/U	Attenuator	12.3.2
CN-168A/U	Attenuator	12.3.2
CN-169A/U	Fixed Attenuator	12.3.2
CU-79/UP	Directional Coupler	12.3.5
CU-225/U	Directional Coupler	12.3.5
CV-52/U	Mixer	12.4
CW-224/U	Antenna Shield	12.3.1
DA-2/UP	Dummy Load	12.3.1

ALPHA-NUMERICAL INDEX (Continued)

Designation	Name	Functional Classification
DA-3/UP	Dummy Load	12.3.1
DA-4/UP	Dummy Load	12.3.1
DA-7/UP	Dummy Load	12.3.1
DA-8/UP	Dummy Load	12.3.1
DA-9/UP	Dummy Load	12.3.1
DA-10/UP	Dummy Load	12.3.1
DA-11/UP	Dummy Load	12.3.1
DA-18/U	Dummy Load	12.3.1
DA-19/U	Dummy Load	12.3.1
DA-20/U	Dummy Load	12.3.1
DA-21/U	Dummy Load	12.3.1
DA-22/U	Dummy Load	12.3.1
DA-23/U	Dummy Load	12.3.1
DA-24/U	Dummy Load	12.3.1
DA-25/U	Dummy Load	12.3.1
DA-26/U	Dummy Load	12.3.1
DA-27/U	Dummy Load	12.3.1
DA-28/U	Dummy Load	12.3.1
DA-29/U	Dummy Load	12.3.1
DA-32/U	Dummy Load	12.3.1
DA-37/U	Dummy Load	12.3.1
DA-45/UP	Dummy Load	12.3.1
DA-51/U	Electrical Dummy Load	12.3.1
DA-53/U	Electrical Dummy Load	12.3.1
DA-56/U	Dummy Load, Electrical	12.3.1
DA-64(XE)/UP	Electrical Dummy Load	12.3.1
DA-67/U	Dummy Load, Electrical	12.2.3

ALPHA-NUMERICAL INDEX (Continued)

Designation	Name	Functional Classification
DA-68/U	Electrical Load Dummy	12.3.1
DA-96/U	Electrical Dummy Load	12.3.1
DA-144/U	Dummy Load, Electrical	12.3.1
DA-145/U	Dummy Load, Electrical	12.3.1
DA-146/U	Dummy Load, Electrical	12.3.1
DA-147/U	Dummy Load, Electrical	12.3.1
DA-148/U	Dummy Load, Electrical	12.3.1
DA-149/U	Dummy Load, Electrical	12.3.1
I-99	Test Unit	12.2.3
M-358	Adapter	12.3.5
MC-385-D	Headset Adapter	12.1.4
MX-1381/APM-66	Delay Line	12.3.7
SA-489/U	Switch, Waveguide	12.3.6
SA-509/U	Switch, Waveguide	12.3.6
SA-511/U	Switch, Waveguide	12.3.6
SA-512/U	Switch, Waveguide	12.3.6
TS-74/UPM	Phantom Antenna and Attenuator	12.3.1
TS-89/AP	Voltage Divider	12.2.3
TS-89A/AP	Voltage Divider	12.2.3
TS-89B/AP	Voltage Divider	12.2.3
TS-90/AP	Dummy Load	12.3.1
TS-90A/AP	Dummy Load	12.3.1
TS-98/AP	Voltage Divider	12.2.3
TS-101/AP	Test Load Unit	12.3.1
TS-108/AP	RF Test Load	12.3.1
TS-208/MPM	Dummy Antenna	12.3.1
TS-234/UP	Dummy Load	12.3.1

ALPHA-NUMERICAL INDEX (Continued)

Designation	Name	Functional Classification
TS-234A/UP	Dummy Load	12.3.1
TS-235/UP	Dummy Antenna	12.3.1
TS-253/AP	Dummy Load	12.3.1
TS-265/UP	Voltage Divider	12.2.3
TS-279/UPM	Dummy Load	12.3.1
TS-329/U	Dummy Antenna	12.3.1
TS-338/UP	Dummy Load	12.3.1
TS-346/UP	Test Load	12.3.1
TS-359A/U	Voltage Divider	12.2.3
TS-366A/TPS-10	Dummy Load	12.3.1
TS-366B/TPS-10	Dummy Load	12.3.1
TS-402A/U	Attenuator	12.2.1
TS-453/U	Voltage Divider	12.2.3
TS-578B/U	Decade Resistor	12.1.1
TS-671/U	Decade Capacitor	12.1.3
TS-842/G	Capacitance Decade	12.1.3
UG-28A/U	Radio Frequency Adapter	12.3.5
UG-107B/U	Radio Frequency Adapter	12.3.5
UG-196/U	Adapter	12.3.5
UG-274A/U	Adapter	12.3.5
14ACN	Dummy Load	12.3.1
Ballantine 402A	Multiplier	12.2.2
Ballantine 402B	Multiplier	12.2.2
Bird 80-F	Termaline Coaxial Load Resistor	12.3.1
Bird 82	Termaline Coaxial Load Resistor	12.3.1
Cornell-Dubilier CDA-5	Decade Capacitor	12.1.3
Cornell-Dubilier CDB-3	Decade Capacitor	12.1.3

ALPHA-NUMERICAL INDEX (Continued)

Designation	Name	Functional Classification
Cornell-Dubilier CDC-3	Decade Capacitor	12.1.3
Daven H-693	Attenuator Network	12.2.1
Daven RFB-540-73, 541-73, 542-73	Step Attenuator	12.2.1
Daven 187	Decade Voltage Divider	12.2.3
Daven 6800	Attenuator Network Matching Pads	12.2.1
Eclipse-Pioneer 13656-1-A	Bandpass Filter	12.2.4
General Radio M2	Variac, Autotransformer	12.1.4
General Radio V-10G3	Variable Auto-Transformer	12.1.4
General Radio V-10MT	Variable Auto-Transformer	12.1.4
General Radio V-20M	Variable Auto-Transformer	12.1.4
General Radio, W5M	Variac, Autotransformer	12.1.4
General Radio 219M	Decade Condenser	12.1.3
General Radio 546-C	Microvolter, Audio-Frequency	12.2.1
General Radio 830-E	Filter, Low Pass	12.2.4
General Radio 874-GA	Attenuator, Coaxial	12.3.2
General Radio 874-G10	Attenuator, Coaxial	12.3.2
General Radio 874-WM	Termination, Coaxial	12.3.1
General Radio 1000-P6	Crystal Diode Modulator	12.4
General Radio 1432-M	Decade Resistor	12.1.1
General Radio 1432-N	Decade Resistor	12.1.1
General Radio 1432-P	Decade Resistor	12.1.1
General Radio 1450TA	Decade Attenuator	12.2.1
General Radio 1454-A	Decade Voltage Divider	12.2.3
General Radio 1490-D	Decade Inductor	12.1.2
Gertsch RT-5	AC Voltage Divider	12.2.3
Gertsch RT-9	AC Voltage Divider	12.2.3

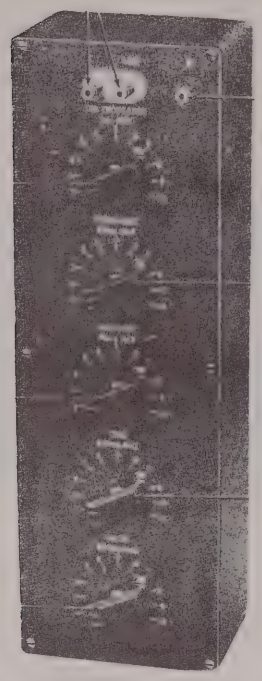
ALPHA-NUMERICAL INDEX (Continued)

Designation	Name	Functional Classification
Gertsch ST-100	Bridge Transformer	12.1.4
Helipot T-10	Linear Variable Resistance	12.2.3
Helipot T-10A	Linear Variable Resistance	12.2.3
Hewlett-Packard 350A	Attenuator Set	12.2.1
Hewlett-Packard 360-A	Filter, Low Pass	12.3.3
Kay 20	Step Attenuator	12.2.1
Leeds and Northrup 1091	Decade Capacitor, Mica	12.1.3
Leeds and Northrup 4747	AC Resistor, Adjustable	12.1.1
Leeds and Northrup 4749	AC Resistor, Adjustable	12.1.1
Microwave 611	Attenuator, Variable Waveguide	12.3.2
Polytechnic 130-B	Attenuator	12.3.2
Sierra 137A	Coupler, Directional Wideband	12.3.5
Sierra 138A	Coupler, Directional Wideband	12.3.5
Sierra 150A	Coupler, Directional Wideband	12.3.5
Sierra 160-20M-50	Termination, Coaxial	12.3.1
Sperry T-101029	Transformer, General Purpose	12.1.4
Sperry 209	Directional Coupler	12.3.5
Sperry 237	Directional Coupler	12.3.5
Sperry 242	Dummy Load	12.3.1
Sperry 306	Directional Coupler	12.3.5
Sperry 322	Directional Coupler	12.3.5
Sperry 467-20	Coupler, Directional Coaxial	12.3.5
Superior Electric S16039	Transformer, Variable	12.1.4

12. PASSIVE NETWORKS -- FOR TEST PURPOSES

12.1 LUMPED CONSTANT ELEMENTS

DECADE RESISTOR TS-578B/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose decade resistor designed primarily to provide accurate resistance values for calibration of bridges and meters, and to load or terminate audio frequency and radio frequency circuits. It may also be used for other applications where a precision, low-current-carrying resistor is required.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to and interchangeable with TS-578/U and TS-578A/U except for maintenance parts.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None required.
Frequency Range: Up to 50 kilocycles per second.
Resistance Range: 1 to 111,110 ohms in steps of 1 ohm.
Zero DC Resistance: 0.015 ohm, maximum.
Resistor Windings: Manganin wire with temperature coefficient of ±0.002% per degree between 20°C. and 100°C.
Switches: Rotary, with 11 silver alloy contacts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-688320		
PROCUREM'T INFO.: Army Spec. 71-3337			
PROCUREM'T COG.: Army		DESIGN COG.: Army, CSL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.1	
- Electronics Test Equipment -			TS-578B/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DECADE RESISTOR TS-578B/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Contact Resistance: Between 0.002 and 0.003 ohm.

Effective Capacitance: Less than 5 micromicrofarads.

Decade Units:

Decade (ohm)	Accuracy (percent)	Maximum Current (milliamperes)	Maximum Inductance (millihenries)
10	±0.25	800	0.056
100	±0.1	250	0.11
1,000	±0.1	80	0.29
10,000	±0.1	23	3.3
100,000	±0.1	7	9.5

Temperature Range: 0°C. to +56°C.

MANUFACTURERS' OR CONTRACTORS' DATA:

Technical Laboratories, 337 Central Avenue, Jersey City 3, New Jersey; Army Order 19612-Phila-49; Approximate Cost per Unit, $100.00, dated 3 February 1954.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

33AA6-2-1 (TM 11-5512) (Instruction Book).

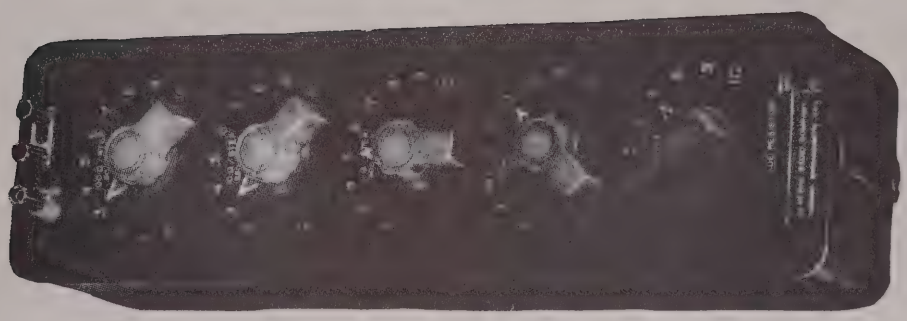
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Resistor TS-578/U	Aluminum	7CAC-688320	15	5	4-7/8	8

DECADE RESISTOR
Type 1432-M
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used where accurate variable resistances are required to accomplish electrical measurements. The equipment may be used as a ratio arm for DC or AC bridges. The decade is designed primarily for DC and audio frequency work. Resistance is indicated directly on calibrated dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment employs five decade resistance units. The lower two decades are Ayrton-Perry wound on molded phenolic forms, especially shaped and heat treated to minimize aging effects. The next higher decade is Ayrton-Perry wound on a form consisting of silicon-fiberglas laminate.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.:	Commercial
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.1.1
- Electronics Test Equipment -			General Radio 1432-M

DECADE RESISTOR
Type 1432-M
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

The remaining two decades are unifilar wound on thin mica cards. The different construction methods are employed to reduce the effects of residual reactances. Three output terminals are provided; two are connected to the decade resistance circuit and the third is connected to the shield.

Power Supply: None.

Resistance Range: 0 to 111,110 ohms in five decades, 1 ohm increments.

Inductance: 0.056 microhenry, 1.0 ohm decade; 0.11 microhenry, 10 ohm decade; 0.29 microhenry, 100 ohm decade; 3.3 microhenries, 1000 ohm decade; 9.5 microhenries, 10,000 ohm decade.

Capacitance: 10 to 15 micromicrofarads per decade (low terminal connected to shield).

Current: 800 milliamps, 1.0 ohm decade; 250 milliamps, 10 ohm decade; 80 milliamps, 100 ohm decade; 23 milliamps, 1000 ohm decade; 7 milliamps, 10,000 ohm decade, maximum.

Residual Impedance: Zero resistance, 0.001 ohm per dial at DC, 0.04 ohm per dial at 1.0 megacycle per second; zero inductance, 0.10 microhenry per dial.

Accuracy: 1.0 ohm resistors ±0.15%; other resistors ±0.05%.

Temperature Coefficient: ±0.002% per degree at 23°C.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $135.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Resistor General Radio 1432-M					

DECADE RESISTOR
Type 1432-M
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Resistor General Radio 1432-M	alum-inum		4-3/4	4-5/16	15-3/4	6.3

DECADE RESISTOR
Type 1432-N
(General Radio Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used where accurate variable resistances are required to accomplish electrical measurements. The equipment may be used as a ratio arm for DC or AC bridges. The decade is designed primarily for DC and audio frequency work. Resistance is indicated directly on calibrated dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment employs five decade resistance units. The lowest decade is constructed from hairpin-shaped ribbon. The next two higher decades are Ayrton-Perry wound on phenolic forms especially shaped and heat treated to minimize aging effects. The fourth decade is Ayrton-Perry wound on a form consisting of silicon-fiberglas laminate. The highest value decade is

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.1	
- Electronics Test Equipment - General Radio 1432-N			

DECADE RESISTOR
Type 1432-N
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

wound on thin mica cards. The different construction methods are employed to reduce the effects of residual reactances. Three output terminals are provided; two are connected to the decade resistance circuit and the third is connected to the shield.

Power Supply: None.

Resistance Range: 0 to 11,111 ohms in five decades, 0.1 ohm increments.

Inductance: 0.014 microhenry, 0.1 ohm decade; 0.056 microhenry, 1.0 ohm decade; 0.11 microhenry, 10 ohm decade; 0.29 microhenry, 100 ohm decade; 3.3 microhenries, 1000 ohm decade.

Capacitance: 10 to 15 micromicrofarads per decade (low terminal connected to shield).

Current: 1.6 amp, 0.1 ohm decade; 800 milliamps, 1.0 ohm decade; 250 milliamps, 10 ohm decade; 80 milliamps, 100 ohm decade; 23 milliamps, 1000 ohm decade, maximum.

Residual Impedance: Zero resistance, 0.001 ohm per dial at DC, 0.04 ohm per dial at 1.0 megacycle per second; zero inductance, 0.10 microhenry per dial.

Accuracy: 0.1 ohm resistors, ±0.5%; 1.0 ohm resistors, ±0.15%; other resistors, ±0.05%.

Temperature Coefficient of Resistance: ±0.002% per degree C at 23°C.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $124.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Resistor General Radio 1432-N					

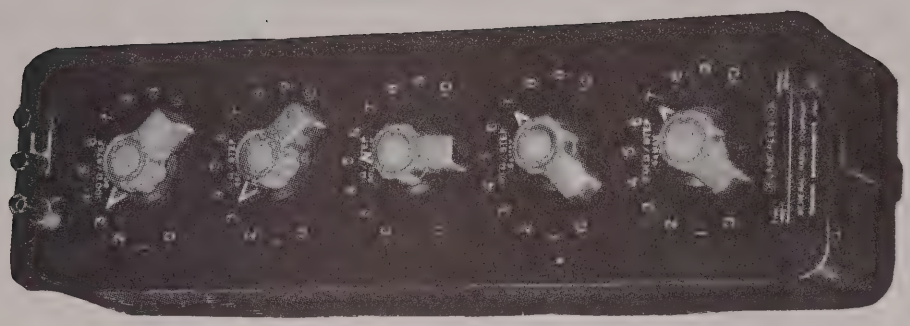
DECADE RESISTOR
Type 1432-N
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Resistor General Radio 1432-N	alum-inum		4-3/4	4-5/16	15-3/4	6.3

46

DECADE RESISTOR
Type 1432-P
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used where accurate variable resistances are required to accomplish electrical measurements. The equipment may be used as a ratio arm for DC or AC bridges. The decade is designed primarily for DC and audio frequency work. Resistance is indicated directly on calibrated dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment employs five decade resistance units. The lowest resistance decade is Ayrton-Perry wound on a molded phenolic form, especially shaped and heat treated to minimize aging effects. The next higher decade is Ayrton-Perry wound on a form consisting of silicon-fiberglas laminate. The remaining decades are unifilar wound on thin mica cards. The different construction methods are employed to reduce the effects of residual

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:	Navy	DESIGN COG.:	Commercial
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.1.1
- Electronics Test Equipment - General Radio 1432-P			

DECADE RESISTOR
Type 1432-P
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

reactances. Three output terminals are provided; two are connected to the decade resistance circuit and the third is connected to the shield.

Power Supply: None.

Resistance Range: 0 to 1,111,100 ohms in five decades, 10 ohm increments.

Inductance: Zero inductance, 0.10 microhenry per dial; 0.11 microhenry, 10 ohm decade; 0.29 microhenry, 100 ohm decade; 3.3 microhenries, 1000 ohms; 9.5 microhenries, 10,000 ohms.

Capacitance: 10 to 15 microfarads per decade (Low terminal connected to shield).

Current: 250 milliamps, 10 ohm decade; 80 milliamps, 100 ohm decade; 23 milliamps, 1000 ohm decade; 7 milliamps, 10,000 ohm decade; 2.3 milliamps, 100,000 ohm decade, maximum.

Residual Impedance: Zero resistance, 0.001 ohm per dial at DC; 0.04 ohm per dial at 1.0 megacycle per second.

Accuracy: All resistors ±0.05%.

Temperature Coefficient: ±0.002% per degree at 23°C.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $135.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Resistor General Radio 1432-P					

DECADE RESISTOR
Type 1432-P
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Resistor General Radio 1432-P	alum-inum		4-3/4	4-5/16	15-3/4	6.3

AC RESISTOR, ADJUSTABLE
MODEL 4747
(Leeds and Northrup Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used during measurements that require the use of accurate resistance values such as in AC bridge circuits. Resistance is indicated directly on calibrated dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment employs four decade resistors. The lower resistance decade is made of metal strips in multibifilar folds and the remaining three decades are made of fine insulated wire woven to form a webbing. The different methods of construction provide resistors having minimum inductance and capacitance for minimum error over a wide frequency range.

Power Supply: None.

Resistance Range: 0 to 11,110 ohms in four decades, 1.0 ohm increments.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.		(ASO)R16LDN-4747	
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.: 6625-562-7527		FUNCTIONAL CLASS. NO.: 12.1.1	
- Electronics Test Equipment - Leeds & Northrup 4747			

AC RESISTOR, ADJUSTABLE
MODEL 4747
(Leeds and Northrup Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Inductance: 0.5 microhenry, 1.0 ohm decade; 1.0 microhenry, 10 ohm decade; 25 microhenries for 100 ohm decade; 7 microhenries for 1000 ohm decade; 0.4 microhenry for zero setting.

Capacitance: 15 micromicrofarads for 10 kilohm setting.

Current: 1.0 ohm, 0.5 amp; 10 ohms, 0.15 amp; 100 ohms, 0.05 amp; 1000 ohms, 0.015 amp, maximum.

Residual Impedance: 0.03 ohm.

Residual Inductance: 0.4 microhenry at zero dial setting.

Accuracy: DC resistance change from zero setting, measured across binding posts, equals the dial setting ± (0.1% + 0.01 ohm).

Test Frequency: Resistor characteristics determined at a test frequency of 50 kilocycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

Leeds and Northrup Company, 4934 Stenton Avenue, Philadelphia 44, Pennsylvania; Approximate Cost per Unit, $55.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	AC Resistor, Adjustable Leeds & Northrup 4747	aluminum alloy					

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	AC Resistor, Adjustable Leeds and Northrup 4747					

AC RESISTOR, ADJUSTABLE
MODEL 4749
(Leeds and Northrup Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used during measurements that require the use of accurate resistance values such as in AC bridge circuits. Resistance is indicated directly on calibrated dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment employs six decade resistors. The three lower value resistance decades are constructed of metal strips in multibifilar folds and the highest three decades are constructed of fine insulated wire woven to form a webbing. The different methods of construction provide resistors having minimum inductance and capacitance for minimum error over a wide frequency range.

Power Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.		(ASO)R16LDN-4749	
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.: 6625-562-7528		FUNCTIONAL CLASS. NO.: 12.1.1	
- Electronics Test Equipment - Leeds & Northrup 4749			

AC RESISTOR, ADJUSTABLE
MODEL 4749
(Leeds and Northrup Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Resistance Range: 0 to 11,111.1 ohms in six decades, 0.01 ohm increments.

Inductance: 0.2 microhenry, 0.01 ohm decade; 0.2 microhenry, 0.1 ohm decade; 0.5 microhenry, 1.0 ohm decade; 1.0 microhenry, 10 ohm decade; 25 microhenries, 100 ohm decade; 15 microhenries for zero setting.

Capacitance: 15 micromicrofarads for 10 kilohm setting.

Current: 0.01 ohm, 5 amps; 0.1 ohm, 1.6 amp; 1.0 ohm, 0.5 amp; 10 ohms, 0.15 amp; 100 ohms, 0.05 amp and 1000 ohms, 0.015 amp.

Residual Impedance: 0.03 ohm.

Residual Inductance: 0.7 microhenry.

Accuracy: DC resistance change from zero setting, measured across binding posts, equals the dial settings ± (0.1% + 0.01 ohm).

Test Frequency: Resistor characteristics determined at a test frequency of 50 kilocycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

Leeds and Northrup Company, 4934 Stenton Avenue, Philadelphia 44, Pennsylvania; Approximate Cost per Unit, $90.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

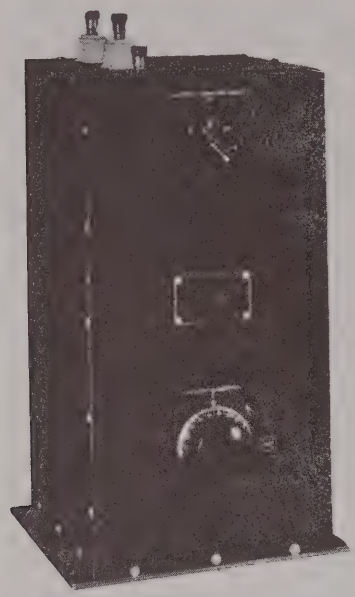
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	AC Resistor, Adjustable Leeds & Northrup 4749	aluminum alloy					

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	AC Resistor, Adjustable Leeds & Northrup 4749					

ANTENNA TUNING UNIT BC-306-A
(TUNER, RADIO FREQUENCY, BC-306-A)



FUNCTIONAL DESCRIPTION:

A portable, special purpose unit, used in field and depot testing of radio sets. It is used in service to furnish the additional series inductive resistance loading required for resonating the antennas used with transmitter tuning units below their normal frequencies. The antennas used at these frequencies are largely capacitive in their loading effect on the transmitter. A variometer control and a three-gang, five position switch are located on the front panel. Two high voltage connectors and a ground connector are located on top of the case. One high voltage connector is for the antenna and the other is for the transmitter. The ground connector grounds the case and internal shields. The case is fastened to a mounting by four snap slide fasteners.

RELATIONSHIP TO OTHER EQUIPMENT:

This unit is used in testing Radio Set SCR-188-A.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The circuit consists of a variable inductance and a special switch to insert fixed inductances or to cut the entire unit out of the antenna system.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	1600-211492000		2C516-A
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, SigC	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.2	
- Electronics Test Equipment -			BC-306-A

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ANTENNA TUNING UNIT BC-306-A
(TUNER, RADIO FREQUENCY, BC-306-A)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Supply: None required.
Frequency Range: 200 to 800 kilocycles per second.
Type of Transmission: Continuous Wave and Amplitude Modulated.
Input and Output Power Rating: 40 to 75 watts.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Electric Company, Schenectady, New York; Army Order 22695-PHILA-44-06, Order 2537-42 and Order 2536-42 dated 30 June 1942; Approximate Cost per Unit, $60.42.

Hammond Instrument Company, Chicago, Illinois; Army Order 12111-43, dated 26 October 1944; Approximate Cost per Unit, $52.52.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TM 11-800 (TO 16-40BC191-5) (Operating and Maintenance Instructions for BC-191).
TO 16-40BC191-3 (Maintenance Instructions for BC-191 and BC-375).

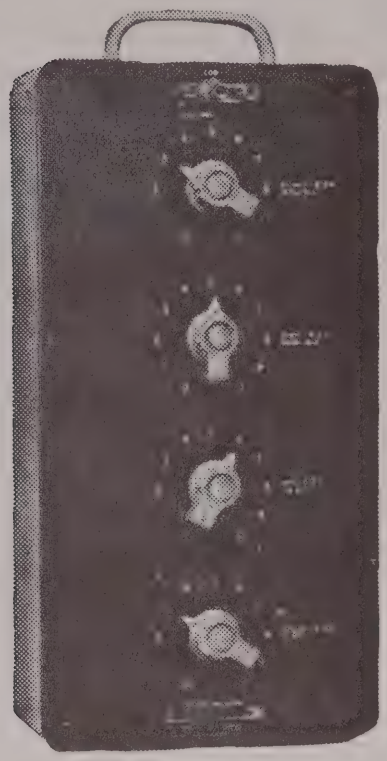
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Antenna Tuning Unit BC-306-A Including:	Aluminum	1600-211492000 2C516-A	17-3/4	9-1/2	9-1/8	9.75
1	Mounting FT-142						

DECADE INDUCTOR
Type No. 1490-D
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, step-adjustable, calibrated inductor used in circuit development and experimental filters, equalizers, and other networks.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The assembly basically consists of four inductor units decaded in a single metal cabinet. The inductor unit consists of four inductors wound on molybdenum-permalloy dust cores. Each of the four inductors consists of relative values of 1, 2, 2 and 5 which are combined by switching to give eleven successive values of 0 through 10. A rotary type switch is used for connecting the desired value of inductance to the terminals mounted on the panel. A ground terminal is provided which can be connected to the adjacent "low" terminal, leading to the smallest decade.

Power Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.2	
- Electronics Test Equipment - General Radio 1490-D			

DECADE INDUCTOR
Type No. 1490-D
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Inductance Range: 0 to 11.11 henries in 0.001 henry increments.
Zero Inductance: 1 microhenry, approximately.
Change in Inductance with Frequency:
10 Henries: 0.15% to 10% from 0.11 to 3.5 kilocycles per second.
1 Henry: 0.01% to 10% from 0.2 to 7 kilocycles per second.
100 Microhenries: 0.01% to 10% from 0.6 to 20 kilocycles per second.
10 Microhenries: 0.01% to 10% from 1.8 to 51 kilocycles per second.
1 Microhenry: 0.01% to 10% from 5 to 155 kilocycles per second.
Maximum Voltage: 500 volts.
Maximum Current: 70 times the alternating current required for a 0.25% change in operating current.
Temperature Coefficient: Approximately -0.0025% per 1°C between 16°C and 32°C.
DC Resistance: 40 ohms per henry.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $460.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

SHIPPING DATA:

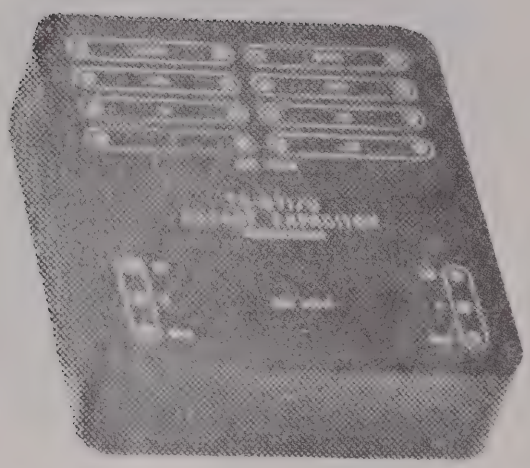
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Inductor General Radio 1490-D					

DECADE INDUCTOR
Type No. 1490-D
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Inductor General Radio 1490-D	alum-inum		16-3/4	8-1/2	5-1/2	21-3/4

DECADE CAPACITOR TS-671/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose unit used for the test and repair of electrical and electronic equipment. Test results are indicated by operation of the unit under test.

RELATIONSHIP TO OTHER EQUIPMENT:

The TS-671/U is a major unit of Test-Tool Set AN/USM-3 which is used for emergency test and repair of electrical and electronic equipment.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The decade capacitor is composed of paper and electrolytic capacitors used to give a range of capacities. The capacitors are individually terminated in jacks provided a common negative.

Power Supply: None.

Range: 0.0001 to 48 microfarads.

Tolerance: ±10% (paper); 0, +75% (electrolytic).

Voltage Rating: 500 volts DC (paper); 450 volts DC (electrolytic).

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.: Spec CS-838			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
- Electronics Test Equipment -			TS-671/U

DECADE CAPACITOR TS-671/U

MANUFACTURERS' OR CONTRACTORS' DATA:
Radio Frequency Laboratories, Inc., Boonton, New Jersey; Contract No. NObsr 42100.

TUBE COMPLEMENT:
None

REFERENCE DATA AND LITERATURE:
Catalog of Navy Material.
NavShips 900, 155, Vol II.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Capacitor TS-671/U	phen-olic		4-3/4	4-3/8	1-9/32	

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Capacitor TS-671/U					

CAPACITANCE DECADE TS-842/G

FUNCTIONAL DESCRIPTION

A portable, general purpose equipment used primarily in bridge circuits for measuring the electrical capacitance of unknown capacitors and as a capacitance standard. The equipment may also be used in the substitution method to find a satisfactory operating value of capacitance for a particular circuit.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Industrial Instruments DK-2A.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The capacitance decade consists basically of mica capacitors which are connected to selector switches. The paralleling-type switches progressively add capacitance combinations to give unit steps as the dials are rotated.

Power Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.: Navy			
PROCUREM'T COG.:		DESIGN COG.: Army	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 1. 3	
- Electronics Test Equipment -			TS-842/G

CAPACITANCE DECADE TS-842/G

ELECTROMECHANICAL DESCRIPTION: (Continued)
Range: 0 to 10 microfarads in steps of 0.001 microfarads.
Accuracy: ±1%.
Residual Capacitance: 29 micromicrofarads.
Power Factor: 0.2%.
Maximum Input Voltage: 700 volts DC; 500 volts AC, 60 cycles per second.
Dielectric Material: Mica.

MANUFACTURERS' OR CONTRACTORS' DATA:
Industrial Instruments, Inc., 89 Commerce Road, Cedar Grove, New Jersey; Approximate Cost per Unit, $140.00.

TUBE COMPLEMENT:
None

REFERENCE DATA AND LITERATURE:
Dwg A-6690, Part 9683D, Instructions and Parts List for Capacitance Decades.

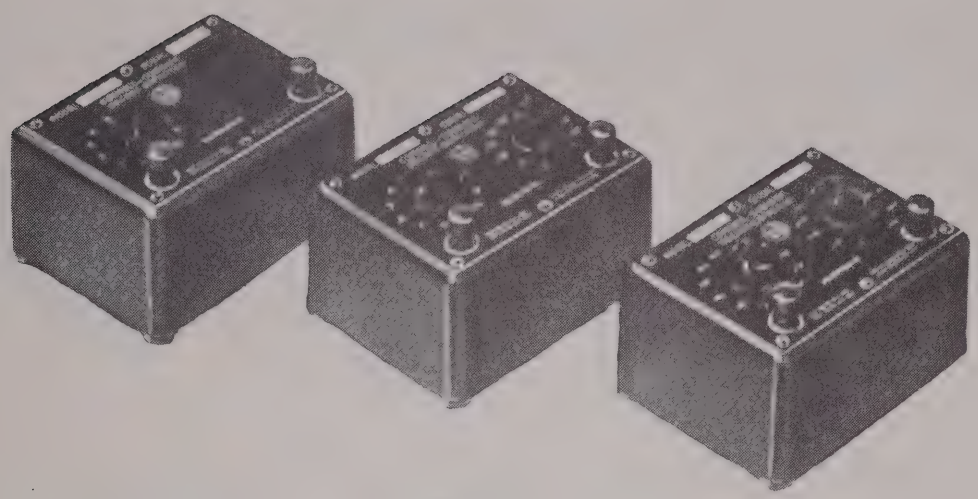
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Capacitance Decade TS-842/G	wood		7	8	6	8

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Capacitance Decade TS-842/G					10

DECADE CAPACITOR
MODEL CDA-5
(Cornell-Dubilier Electric Corporation)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument used as a variable capacitor in testing the A-3 Fire Control System. A comparison of installed capacitors is made by the sutstitution method. Calibration markings are indicated directly in microfarads. A calibration chart is furnished giving exact capacity values for all scale markings extending use to more precise measurements.

RELATIONSHIP TO OTHER EQUIPMENT:

This model may be grouped in parallel with models CDC and CDB. The capacity differs with the model and the latter two models have oilpaper dielectrics.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Maximum Voltages: 220 volts AC, 600 volts DC.
Capacity: 0.011 microfarads in 0.0001 microfarad steps.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-132015		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
- Electronics Test Equipment - Cornell-Dubilier CDA-5			

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DECADE CAPACITOR
MODEL CDA-5
(Cornell-Dubilier Electric Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Dielectric: Mica.
Tolerances: ±5%.

MANUFACTURERS' OR CONTRACTORS' DATA:
Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey; Approximate Cost per Unit, $9.35, 1953.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog No. 167A, 1939-1940.

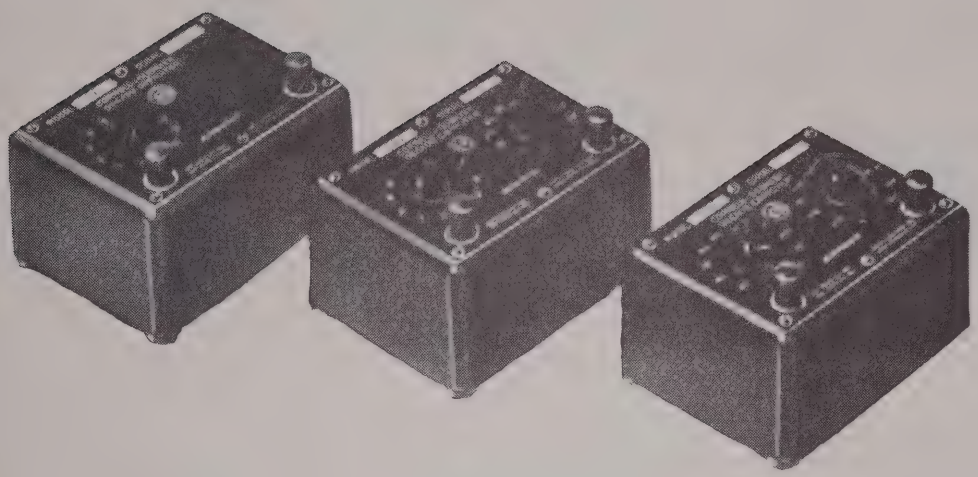
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Capacitor Model CDA-5	Walnut bakelite	7CAC-132015	3-5/8	5	3	2.5

DECADE CAPACITOR
MODEL CDB-3
(Cornell-Dubilier Electric Corporation)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument used as a variable capacitor in testing the A-3 Fire Control System. A comparison of installed capacitors is made by the substitution method. Calibration markings are indicated directly in microfarads. A calibration chart is furnished giving exact capacity values for all scale markings extending use to more precise measurements.

RELATIONSHIP TO OTHER EQUIPMENT:

This model may be grouped in parallel with models CDA and CDC. The capacity differs with the model and model CDA has a mica dielectric.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Maximum Voltages: 220 volts AC, 600 volts DC.
Capacity: 1.1 microfarads in 0.01 microfarad steps.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
- Electronics Test Equipment - Cornell-Dubilier CDB-3			

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

DECADE CAPACITOR
MODEL CDB-3
(Cornell-Dubilier Electric Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Dielectric: Oilpaper.
Tolerance: ±3%.

MANUFACTURERS' OR CONTRACTORS' DATA:
Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey; Approximate Cost per Unit, $13.20, 1953.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog No. 167A, 1939-1940.

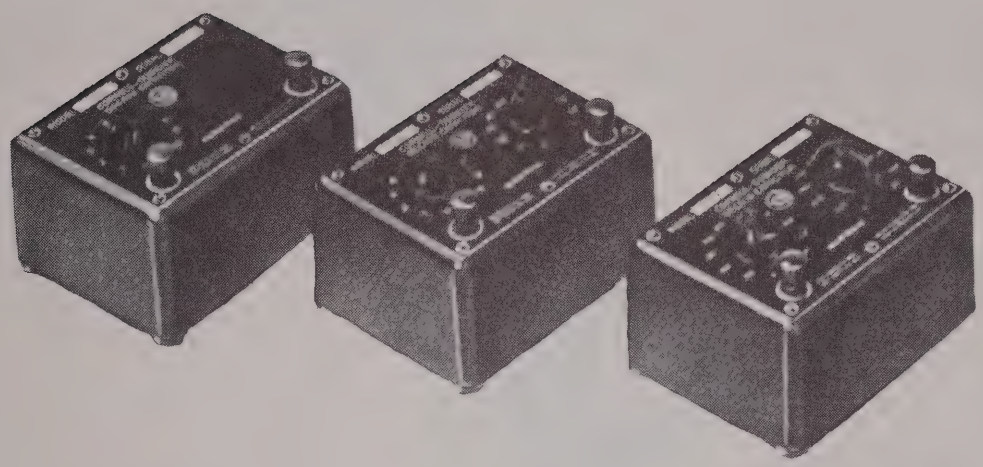
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Capacitor Model CDB-3	Walnut bakelite		3-5/8	5	3	2.5

DECADE CAPACITOR
MODEL CDC-3
(Cornell-Dubilier Electric Corporation)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument used as a variable capacitor in testing the A-3 Fire Control System. A comparison of installed capacitors is made by the substitution method. Calibration markings are indicated directly in microfarads. A calibration chart is furnished giving exact capacity values for all scale markings extending use to more precise measurements.

RELATIONSHIP TO OTHER EQUIPMENT:

This model may be grouped in parallel with models CDA and CDB. The capacity differs with the model and model CDA has a mica dielectric.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Maximum Voltages: 220 volts AC, 600 volts DC.
Capacity: 10.0 microfarads in 1.0 steps.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
- Electronics Test Equipment - Cornell-Dubilier CDC-3			

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DECADE CAPACITOR
MODEL CDC-3
(Cornell-Dubilier Electric Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Dielectric: Oilpaper.
Tolerances: ±3%.

MANUFACTURERS' OR CONTRACTORS' DATA:
Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey; Approximate Cost per Unit, $21.45, 1953.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog No. 167A, 1939-1940.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Capacitor Model CDC-3	Walnut bakelite		3-5/8	5	3	2.5

DECADE CONDENSER
TYPE 219M
(General Radio Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument used as a wide-range variable condenser. A comparison of installed condensers is made by the substitution method. Can be used as tuned circuit elements, bridge impedances, filter elements, etc. Three detent switches are calibrated in microfarads.

RELATIONSHIP TO OTHER EQUIPMENT:

Used in testing prime equipment Interceptor Guidance Group AN/GPA-6.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of three General Radio, Decade Capacitor Units, types 380-L, M, and N; the 380-M and N types use mica capacitors molded in phenolic cases; the type 380-L uses ceresin-impregnated linen capacitor units. Each decade is an assembly of four individual capacitor units. A selector switch is arranged to make parallel combinations of the units so that any one of 10 values may be obtained.

Power Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			3F1810-1
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
	- Electronics Test Equipment -		General Radio 219M

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A

DECADE CONDENSER
TYPE 219M
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Maximum Voltage and Frequency:

380-L: 300 volts maximum up to 1 kilocycle per second.
380-M: 300 volts maximum up to 100 kilocycles per second.
380-N: 300 volts maximum up to 1000 kilocycles per second.
At higher frequencies the allowable voltage decreases, and is inversely proportional to the square root of the frequency.

Capacitance: 1.110 microfarads in 0.001 microfarad steps.

Effective Zero Capacitance: 30 micromicrofarads.

Dissipation Factor:

380-L: 0.010.
380-M: 0.0010.
380-N: 0.0025.

Accuracy: Types 380-M and N: ±1%. Type 380-L: ±2%.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Corporation, 275 Massachusetts Avenue, Cambridge 39, Massachusetts; Approximate Cost per Unit, $95.00, 1951.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "M" 1951.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Condenser Type 219M	Aluminum and wood	3F1810-1	5-7/8	5-1/2	13-3/4	8.62

DECADE CAPACITOR, MICA
MODEL 1091
(Leeds and Northrup Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used as a reference standard in an AC bridge or with other equipment where a decade capacitor is required. Capacitance is indicated directly on the decade dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment is essentially three silvered mica capacitors hermetically sealed in individual, grounded metal cases. Two terminals are provided for connecting the capacitor to external circuits. A third terminal permits grounding the capacitor circuit. The terminals are lightly gold-plated to avoid corrosion and will accommodate banana plugs or spade clips.

Power Supply: None.

Capacitance Range: 55 micromicrofarads to 1.11 microfarad (zero capacitance, 55 micromicrofarads).

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.3	
- Electronics Test Equipment - Leeds & Northrup 1091			

DECADE CAPACITOR, MICA
MODEL 1091
(Leeds and Northrup Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Calibration: Three dials, 0.1, 0.01 and 0.001 microfarad per step; each dial variable in ten steps and zero.

Accuracy: Measured from binding post at 1000 cycles per second, capacitance difference between each setting of each dial and its zero setting with other dials on zero agrees with nominal value of that setting to ±(0.1% ±0.5 micro-microfarads).

Voltage: 500 volts peak, maximum.

Current: 1.0 amp rms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Leeds and Northrup Company, 4901 Stenton Avenue, Philadelphia 44, Pennsylvania; Approximate Cost per Unit, $697.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Capacitor, Mica Leeds and Northrup 1091	aluminum alloy		4-1/2	12-3/4	7-1/4	4

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Capacitor, Mica Leeds and Northrup 1091					

TRANSFORMER CN-16A/U

FUNCTIONAL DESCRIPTION:

This is a variable power, general purpose, autotransformer used to adjust an AC voltage from zero to above line voltage. The output voltage is controlled by means of a knob on a calibrated dial. The case is perforated to provide air-cooling.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to CN-16/U except that CN-16/U is similar to the new General Radio Type V-5MT variable transformer with V5-87 adapter plate, instead of General Radio Type 200-CM, which is no longer made.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: 115 volts, AC, 60 cycles per second, single phase.

Output Data:

0 to 115-volt range: 7.5 amperes, maximum; 0.86 kilovolt-amperes.

0 to 135-volt range: 5 amperes, maximum; 0.67 kilovolt-amperes.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	3340-297590423	16-T-4612	2Z9957-39
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, SigC	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment -			CN-16A/U

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

TRANSFORMER CN-16A/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Dial Calibration: 0 to 135 volts in 2-volt steps.
Terminal Data: 7 screw lug terminals inside case.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, 279 Massachusetts Avenue, Cambridge 39, Massachusetts.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

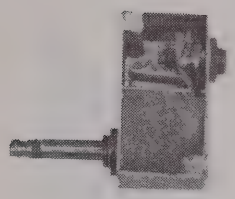
SHIPPING DATA:

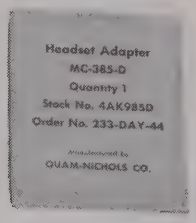
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Transformer CN-16A/U	0.21	6	7-1/4	8-1/4	8.75

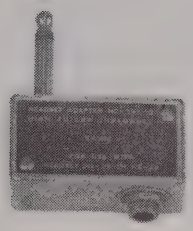
EQUIPMENT SUPPLIED:

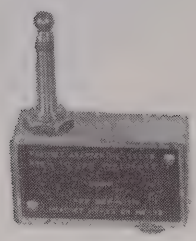
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Transformer CN-16A/U	Metal	3340-297590423 16-T-4612 2Z9957-39	5		4-15/16 dia.	8

HEADSET ADAPTER MC-385-D
(ADAPTER, HEADSET, MC-385-D)









FUNCTIONAL DESCRIPTION:

A portable, special purpose, impedance matching device designed to match the low impedance of Headset HS-33 or HS-38 to the high impedance output of the standard aircraft radio and interphone equipments. It is used as test equipment in conjunction with the headsets for various audio checks on radio sets such as preflight setting of the squelch, determining resonance, and noise measurements.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The headset adapter consists of an autotransformer and a phone jack housed in a metal case with a plug element extending from the case.

Power Supply: None required.

Autotransformer Voltage Ratio: 2.5 to 1.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	1600-402345060		4A985D
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment -			MC-385-D

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

HEADSET ADAPTER MC-385-D
(ADAPTER, HEADSET, MC-385-D)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Input Impedance: 3750 ohms (±5%) when the output of the transformer is loaded with a 600-ohm non-inductive resistance.

MANUFACTURERS' OR CONTRACTORS' DATA:

United Transformer Company, New York 13, New York; Order No. 609-WE-43 (BP-42-M-1471), Order No. 11888-WF-43 (Plan No. 1613), and Order No. 92-44, dated 16 August 1943; Approximate Cost per Unit, $1.72.

Quam-Nichols Company, Chicago 16, Illinois; Order No. 233-DAY-44.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-1-29 (Maintenance Instructions).

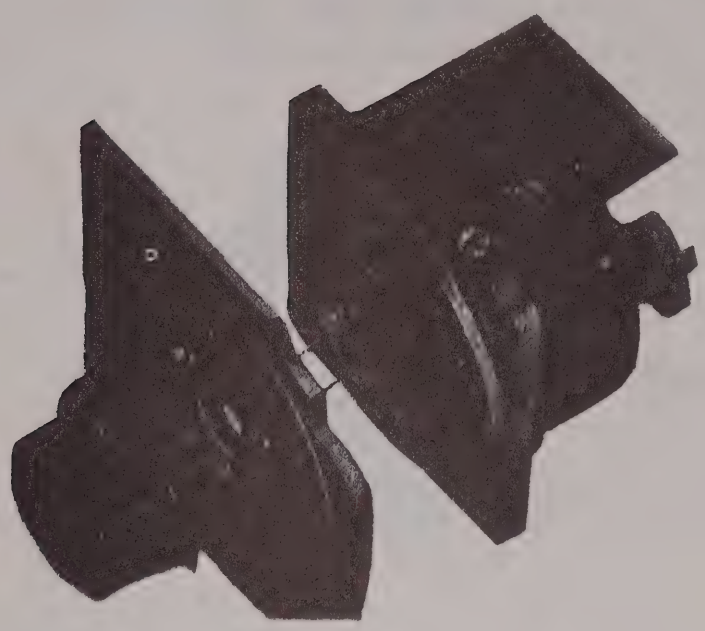
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Headset Adapter MC-385-D		1600-402345060 4A985D	2	1-1/8	7/8	0.17

VARIAC, AUTOTRANSFORMER
Type M2
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, variable autotransformer used to provide continuous manual control of AC voltages from 0 to 17% above the input line voltage.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The autotransformer essentially consists of a single-layer winding on a toroidal silicon-steel core. The output voltage is adjusted by rotating a control which is mechanically connected to a carbon brush that traverses the winding, tapping off a portion of the total voltage across the winding. Holes are provided for ganging and mounting.

Power Supply: 120 volts, AC, single-phase, 350 to 1200 cycles per second.

Output (Line-Voltage Connection): 0.37 kilovolt-amps at maximum output voltage; 2.4 amps, rated; 3.1 amps, maximum; 0-120 volts, AC.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - General Radio M2			

VARIAC, AUTOTRANSFORMER
Type M2
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Output (Overvoltage Connection): 0-140 volts, AC; 2.4 amps, rated.
No Load Loss at 400 cycles per second: 3.4 watts.
Angle of Rotation: 320 degrees.
Driving Torque: 5 to 10 ounce-inches.
Coil Winding: 400 turns.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $14.50.

TUBE COMPLEMENT:
None

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

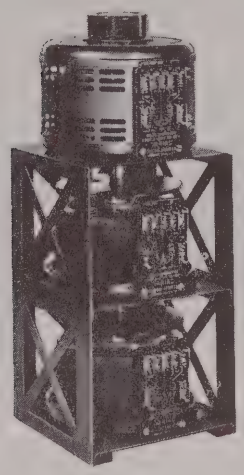
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Variac, Autotransformer General Radio M2	metal					2

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Variac, Autotransformer General Radio M2					

VARIABLE AUTO-TRANSFORMER
(VARIAC)
MODEL V-10 G3®
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, continuously variable voltage control that adjusts a three-phase line voltage when testing the A-3 Fire Control System. Can be used in any application where an accurate three-phase voltage source is necessary. The dial control is calibrated in volts.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of three Variacs ganged together in a Wye connected circuit to produce three-phase voltage. Each Variac contains a single-layer winding on a toroidal coil. As the dial is rotated, a carbon-brush contact traverses the winding "tapping off" a portion of the total voltage across the winding.

Power Supply: 230 volts (three-phase), 50 to 2400 cycles per second.

Output Voltage: 0 to 230 volts (three-phase).

Rated Current: 10 amperes.

Maximum Current: 15 amperes.

Load Rating: 6 kilovolt-amperes.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - General Radio V-10 G3			

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VARIABLE AUTO-TRANSFORMER
(VARIAC)
MODEL V-10 G3®
(General Radio Company)

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Massachusetts; Approximate Cost per Unit, $113.00, January 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "M", 1951.
Manufacturer's Pamphlet "Variacs for Smooth Voltage Control."

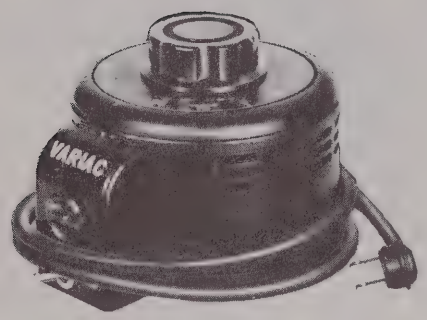
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Variable Auto-Transformer (Variac), Model V-10 G3	1.8	12-1/2	19-1/2	10-3/4	48

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Variable Auto-Transformer Model V-10 G3	Metal		15-3/8	6-17/64 dia.		37.5

VARIABLE AUTO-TRANSFORMER
(VARIAC)®
TYPE V-10MT
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, continuously variable voltage control that adjusts an AC voltage from zero to above line voltage. It can be used in the testing and calibration of voltmeters, ammeters, wattmeters, and power-factor meters; it is used in any application where an accurate voltage source is necessary. The dial control is calibrated in volts. Designed for laboratory use.

RELATIONSHIP TO OTHER EQUIPMENT:

Used to test Radio Set AN/TRC-30.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of a single-layer winding on a toroidal iron core. As the dial is rotated, a carbon-brush contact traverses the winding "tapping off" a portion of the total voltage across the winding.

Power Supply: 115 volts, 50 to 2400 cycles per second.

Output Voltage: (Over Voltage Connection): 0 to 135 volts. Rated Current: 10 amperes. Maximum Current: 10 amperes.

Output Voltage: (Line Voltage Connection): 0 to 115 volts. Rated Current: 10 amperes. Maximum Current: 13 amperes.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	3340-064400390		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - Gen. Radio Type V-10MT			

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VARIABLE AUTO-TRANSFORMER
(VARIAC)®
TYPE V-10MT
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Load Rating: 1.725 kilovolt amperes.
No Load Loss: 17 watts at 60 cycles per second.
Driving Torque: 30 to 60 inch-ounces.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Massachusetts; Approximate Cost per Unit, $40.00, January 1953.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog "M", 1951.
Manufacturer's Pamphlet "Variacs for Smooth Voltage Control."

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Variable Auto-Transformer Type V-10MT	0.61	10	12	12	17

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Variable Auto-Transformer Type V-10MT Including:		3340-064400390	5-1/8	6-17/64 dia.		13.125
1	Terminal Cover						
1	Terminal Outlet						
1	Cord						

VARIABLE AUTO-TRANSFORMER (VARIAC)® MODEL NO. V-20M (General Radio Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose, continuously variable voltage control that adjusts an AC voltage from zero to above line voltage. Can be used in the testing and calibration of voltmeters, ammeters, wattmeters, and power-factor meters; used in any application where an accurate voltage source is necessary. The dial control is calibrated in volts.

RELATIONSHIP TO OTHER EQUIPMENT:

Used to test Radio Set AN/TPS-1D.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of a single-layer winding on a toroidal iron core. As the dial is rotated, a carbon-brush contact traverses the winding "tapping off" a portion of the total voltage across the winding.

Power Supply: 115 volts, 50 to 2400 cycles per second.

Output Voltage: (Over Voltage Connection): 0 to 135 volts. Rated Current: 20 amperes. Maximum Current: 20 amperes.

Output Voltage: (Line Voltage Connection): 0 to 115 volts. Rated Current: 20 amperes. Maximum Current: 26 amperes.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	3340-064400000		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - General Radio No. V-20M			

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VARIABLE AUTO-TRANSFORMER
(VARIAC)®
MODEL NO. V-20M
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Load Rating: 3.45 kilovolt amperes.
No Load Loss: 27 watts at 60 cycles per second.
Driving Torque: 55 to 110 inch-ounces.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Massachusetts; Approximate Cost per Unit, $55.00, January 1953.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog "M", 1951.
Manufacturer's Pamphlet "Variacs for Smooth Voltage Control."

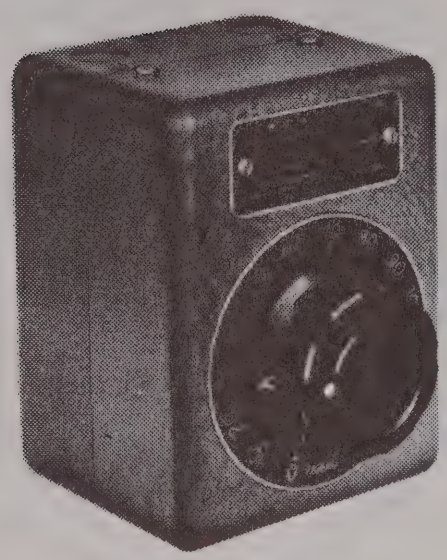
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Variable Auto-Transformer Model No. V-20M	0.61	8-1/4	12-3/4	10	27

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Variable Auto-Transformer Model No. V-20M Including:		3340-064400000	5-1/2	7-7/8 dia.		22
1	Case	Metal					
1	Terminal Box	Metal					

VARIAC, AUTOTRANSFORMER
Type W5M
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, variable autotransformer used to provide continuous manual control of AC voltages from 0 to 17% above the input line voltage.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The autotransformer essentially consists of a single-layer winding wound on a toroidal silicon-steel core. The output voltage is adjusted by rotating a control which is mechanically connected to a carbon brush that traverses the winding, tapping off a portion of the total voltage across the winding. The unit is mounted in a dust-proof case.

Power Supply: 120 volts, AC, single-phase, 60 to 400 cycles per second.

Output (Line-Voltage Connection): 0.78 kilovolt-amp load rating; 0-120 volts, AC; 5 amps, rated; 6.5 amps, maximum.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	

VARIAC, AUTOTRANSFORMER
Type W5M
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Output (Overvoltage Connection): 0-140 volts, AC; 5 amps, rated.
No Load Loss at 60 cycles per second: 9 watts.
Angle of Rotation: 320 degrees.
Driving Torque: 10 to 20 ounce-inches.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $24.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

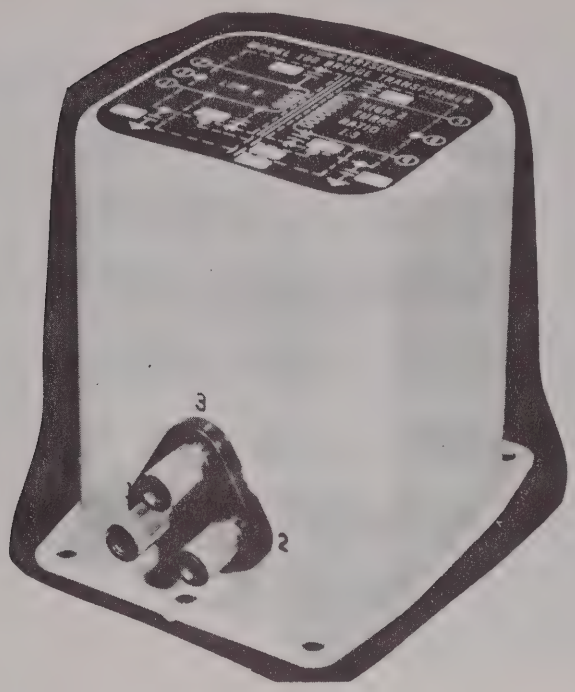
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Variac, Autotransformer General Radio W5M	metal		5-9/16	4-1/8	4-1/4	4-1/8

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Variac, Autotransformer General Radio W5M					

BRIDGE TRANSFORMER
MODEL ST-100
(Gertsch Products, Incorporated)



FUNCTIONAL DESCRIPTION:

A portable, general purpose unit used as a component in AC bridges to isolate detectors from measuring networks or to provide a balanced output from an unbalanced generator. In addition the equipment may be used as a step-up or step-down transformer.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Power Supply: 115 volts, AC, 60 cycles per second into high side winding when load across low side winding is greater than 100 ohms.
Frequency Range: 20 to 5,000 cycles per second.
Turns Ratio: 4 to 1.
Intershield Capacitance: 25 micromicrofarads.
DC Resistance: 120 and 3000 ohms.
Input Impedance: 15,000 ohms at 400 cycles per second with open secondary circuit.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: Commercial	
F.I.I.N.: 5960-679-6862		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - Gertsch ST-100			

BRIDGE TRANSFROMER
MODEL ST-100
(Gertsch Products, Incorporated)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Insulation Breakdown: 500 volts.

MANUFACTURERS' OR CONTRACTORS' DATA:
Gertsch Products, Incorporated, 3211 South La Cienega Boulevard, Los Angeles 16, California.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Bridge Transformer Gertsch ST-100	metal		4-1/2	3-11/16	4-5/16	

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Bridge Transfromer Gertsch ST-100					

TRANSFORMER, GENERAL PURPOSE
Part No. T-101029
(Sperry Gyroscope Company)

FUNCTIONAL DESCRIPTION:

This general purpose transformer is used to obtain various voltages for checking the mechanical setting points of each major assembly of the A-1 Computer.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The transformer consists of one primary winding and two secondary windings. The front of the unit has binding posts for primary input voltage and secondary output voltages. The lid contains a separate power supply cable.

Power Supply: 115 volts, 50 to 1600 cycles, AC, single-phase.

Power Output: 6.3 volts, 5 amperes AC (with center tap).
2 volts, 5 amperes AC.
5 volts, 5 amperes AC
6.3 volts, 5 amperes AC.
10 volts, 1 ampere AC.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CSG-T101029		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment -			Sperry T-101029

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

TRANSFORMER, GENERAL PURPOSE
Part No. T-101029
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Output: (Continued)

12 volts, 1 ampere AC.
23 volts, 1 ampere AC.
26 volts, 1 ampere AC.
40 volts, 1 ampere AC.
115 volts, 0.5 ampere AC.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Division of Sperry-Rand Corporation, Great Neck, Long Island, New York; Contract AF 33(038)14787.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 11B10-2-2-2 (Handbook Maintenance Instructions).

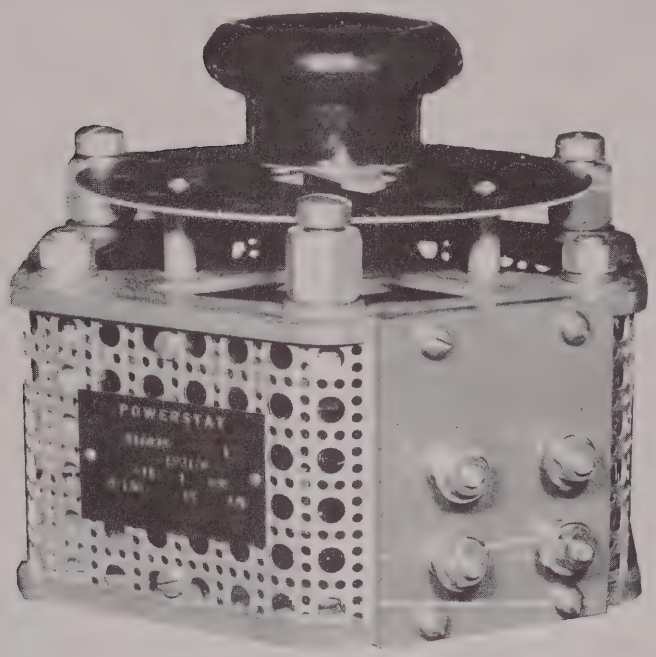
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Transformer, General Purpose (Sperry T-101029)	1.2	13	13	13	18

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Transformer, General Purpose (Sperry T-101029)		7CSG-T101029				
	Including:						
1	Cable, Power Supply						

TRANSFORMER, VARIABLE
Part No. S16039
(Superior Electric Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, continuously variable voltage control that adjusts an AC voltage from zero to above line voltage. The output voltage is controlled by means of a knob on a calibrated dial. Air cooling is provided by a perforated case.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The circuit consists of a single layer winding on a toroidal iron core. As the dial is rotated, a brush contact traverses the winding "tapping off" a portion of the total voltage across the winding.

Power Supply: 115 volts, 400 to 800 cycles per second, single phase.

Output:

Voltage: 0 to 130 volts.

Maximum Current: 15 amperes.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.1.4	
- Electronics Test Equipment - Superior Elec. S16039			

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

TRANSFORMER, VARIABLE
Part No. S16039
(Superior Electric Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Load Rating: 1.95 kilovolt amperes (maximum).
Ambient Operating Temperatures: -40° C. (-40° F.) to +40° C. (104° F.).

MANUFACTURERS' OR CONTRACTORS' DATA:
The Superior Electric Company, 4000 Reynolds Avenue, Bristol, Connecticut,

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Dwg. No. EP3128 (Outline of S16039).

SHIPPING DATA:

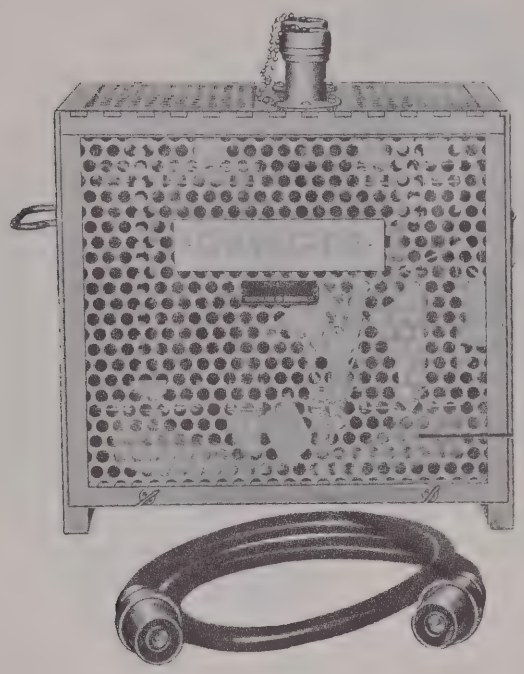
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Transformer, Variable (Superior Electric S16039)	Aluminum		4-9/16	8-1/16	8-1/16	13

12.2 LUMPED CONSTANT NETWORKS

ATTENUATOR CN-45/UP



FUNCTIONAL DESCRIPTION:

A portable general purpose attenuator and modulator load for organizational, field, and depot maintenance. It is used as an artificial load for a modulator to check its operation; it is also used to decrease pulse voltage applied to a magnetron to permit seasoning of the magnetron.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: As an artificial load, the circuit consists of ten non-inductive 10-ohm resistors connected in series-parallel.

As an attenuator, the circuit consists of a resistance and inductance in series. The inductance consists of 30 turns of #16 AWG enameled wire on a 3/4" diameter form.

Power Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075604-3	R16-AN-CN-45/UP	2Z396-45
PROCUREM'T INFO.:			
PROCUREM'T COG.: USN		DESIGN COG.: USN, BuAer	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment -			CN-45/UP

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-45/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 1550 to 5200 megacycles per second.
Input Resistance: Artificial Load: 25 ohms ±10%.
Attenuator: 10 ohms ±10%.
Power Dissipation: Artificial Load: 1500 watts, average, continuous.

MANUFACTURERS' OR CONTRACTORS' DATA:
Maguire Industries Incorporated, Greenwich, Connecticut; USN Contract No. NOa(s)-6789; Approximate Cost per Unit, $168.00.
Hazeltine Electronics Corporation, 85-25 Little Neck Parkway, Little Neck, New York; USN Contracts Nos. N383s-47572; Approximate Cost per Unit, $458.00, and N383s-75234; Approximate Cost per Unit, $475.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
NAVAER 16-5S-511 (Instruction Book).

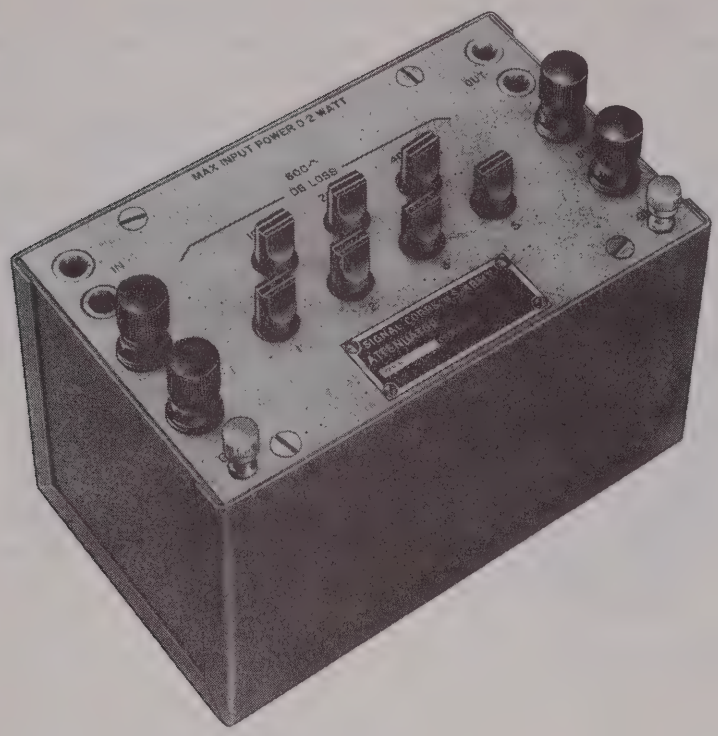
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-45/UP		7CAC-075604-3 R16-AN-CN-45/UP 2Z396-45	17	19	10	36 (complete)
	Including:						
1	Pulse Cable			36 long			
1	Octopus Cable			20 long			
1	Instruction Book NavAer 16-5S-511						

ATTENUATOR TS-402A/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose, variable attenuator used in making transmission gain measurements on voice and carrier frequency equipment. It is designed for use in conjunction with a decibel meter which has an input impedance of 600 ohms, and with an oscillator which has an output impedance of 600 ohms. Testing power for transmission measurements is provided by the oscillator which serves as a power source; the testing power is adjusted by the potentiometer of the oscillator.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to TS-402/U in external appearance, operation, circuit design, application, and in all other respects except for the type resistors used.

Similar to WECo. No. 5A (SPL).

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The attenuator circuit consists of seven balanced pads of the

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			3F1775
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, CSL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment -			TS-402A/U

ATTENUATOR TS-402A/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

0 type and have constant attenuation values. The pads are connected in tandem. Each pad is wired to a two-position rotary switch (locking type) which has two sets of break-make contacts. Each switch is designated on the attenuator control panel by the numerical decibel-loss value of the corresponding pad which it controls.

Input Power: 0.2 watt during continuous operation; 0.5 watt over short periods of time.

Frequency Range: 0 to 100 kilocycles per second.

Attenuation Range: 0 through 81 decibels in steps of 1 decibel.

Input Impedance: 600 ±10 ohms.

Output Impedance: 600 ±10 ohms.

Accuracy: ±0.2 decibel at frequencies from 0 to 50 kilocycles per second; ±0.3 decibel at frequencies from 50 to 100 kilocycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

Western Electric Company, 120 Broadway, New York, New York. SigC Order 2674-PH-44.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS402-5 (TM 11-2044) (Instruction Book).

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator TS-402A/U	Steel	3F1775	5	6-3/4	4-1/8	5

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator TS-402A/U (Export Packed)	0.22	7	8-3/4	6	9

ATTENUATOR NETWORK
Type H-693
(Daven Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose variable attenuator network used in laboratory and production testing as a low impedance, low or high level mixer, and as an attenuation control for measuring equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

This network is used with balanced "H" impedance matching pads Daven Company series 6800.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Frequency Range: 0 to 50,000 cycles per second.
Attenuation Range: 0 to 111 decibels in steps of 0.1 decibel.
Impedance: 600 ohms. Input and output impedance may be changed by substituting "plug in" pads of various values.
Type of Network: Balanced "H".
Type of Winding: Card type, noninductive.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075609-29		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment -			Daven H-693

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

ATTENUATOR NETWORK
Type H-693
(Daven Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Level of Operation: 20 decibels (0.6 watt) maximum input.
Accuracy: Resistor units calibrated +1%.

MANUFACTURERS' OR CONTRACTORS' DATA:
The Daven Company, 191 Central Avenue, Newark 4, New Jersey; Contract No. AF 33(604)9347; Approximate Cost per Unit, $126.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

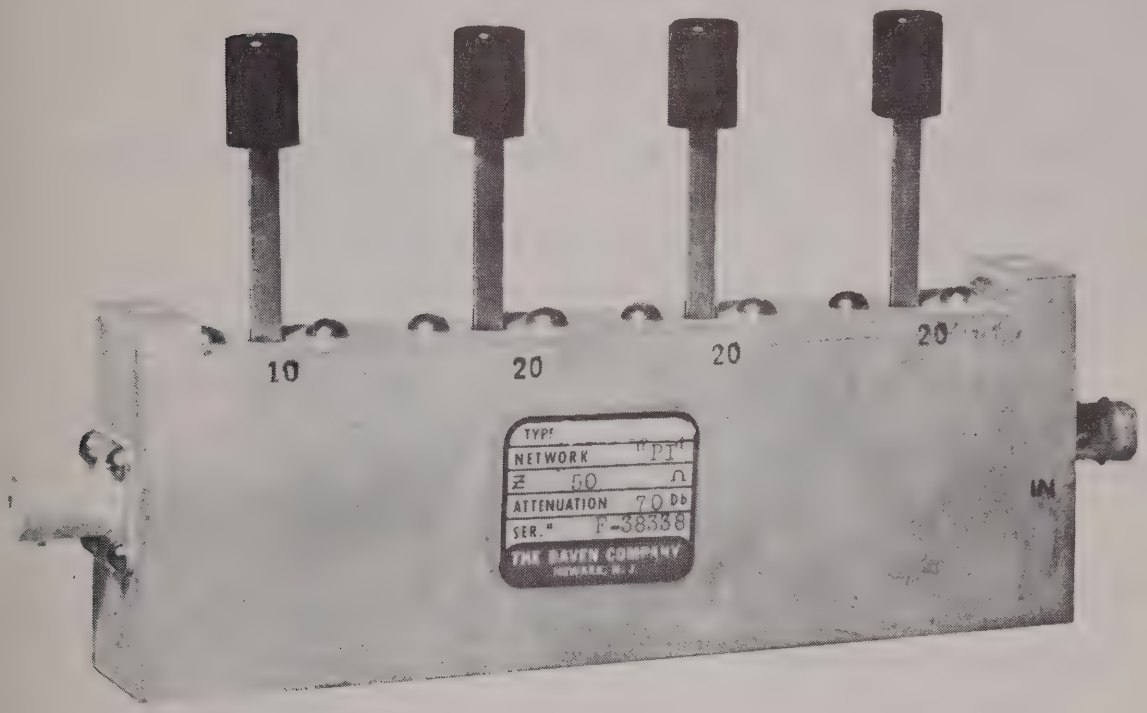
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator Network (Daven H-693)		7CAC-075609-29	5	6	11-1/2	

STEP ATTENUATOR
TYPES RFB-540-73, 541-73, 542-73
(The Daven Company)



UNCTIONAL DESCRIPTION:

A portable, general purpose test instrument used in applications where attenua-on of up to and including VHF is necessary. It can be used in conjunction with sig-al generators, field strength measuring equipment, wideband amplifiers, and pulse nplifiers.

ELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radar Set AN/CPN-4 and Radio Set AN/FPN-16.

LECTROMECHANICAL DESCRIPTION:

ower Supply: None.
requency Range: DC to 225 megacycles per second.
ttenuation Range:
RFB-540-73 - Total 10 decibels: 4 steps: 1, 2, 3, 4 decibels.
RFB-542-73 - Total 20 decibels: 4 steps: 2, 4, 6, 8 decibels.
RFB-541-73 - Total 70 decibels: 4 steps: 10, 20, 20, 20 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075613		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment - Daven-RFB-540-to 542-73			

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

STEP ATTENUATOR
TYPES RFB-540-73, 541-73, 542-73
(The Daven Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Impedance: 73 ohms.
Circuit: Constant input and output impedance (unbalanced).
Type of Connectors: BNC.
Resistor Accuracy: Within ±2% at DC.
Impedance Accuracy: Terminal impedance of loss network is essentially flat from 0 to 225 megacycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:
The Daven Company, 191 Central Avenue, Newark 4, New Jersey.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Pamphlet "RF Attenuators."

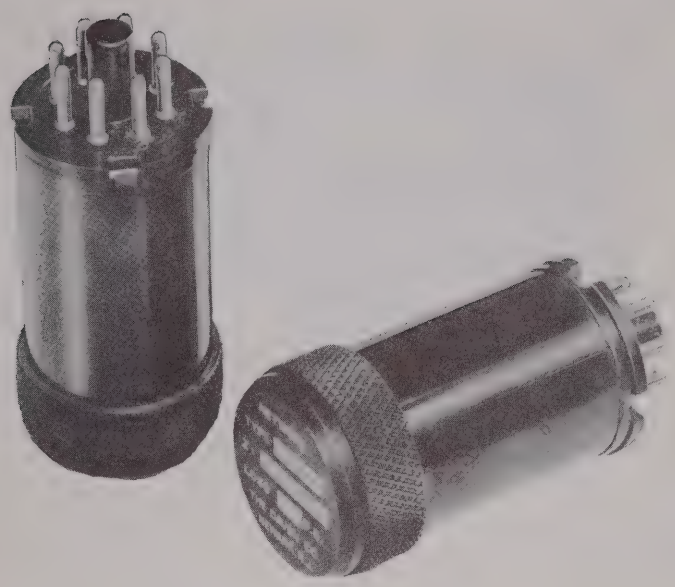
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Step Attenuator RFB-540-73 or		7CAC-075613	2-1/8	6		
1	Step Attenuator RFB-542-73 or						
1	Step Attenuator RFB-541-73						

ATTENUATOR NETWORK MATCHING PADS
Series 6800
(Daven Company)



UNCTIONAL DESCRIPTION:

Convenient "plug in" impedance adjusting networks for use with Daven Company, ype H-693 Attenuator. These pads are available in various values of fixed impe-ance and losses with these values engraved on the top of each unit.

ELATIONSHIP TO OTHER EQUIPMENT:

Used as impedance matching networks in Daven Type H-690-D and H-693 attenua-on networks.

LECTROMECHANICAL DESCRIPTION:

Pads are noninductively wound, aged, and calibrated to within ±1%. Base impe-ance of series 6800 pads is 600 ohms. Those values available are listed on the llowing page:

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.:		DESIGN COG.: Commercial	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
	- Electronics Test Equipment -		Daven Series 6800

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

ATTENUATOR NETWORK MATCHING PADS
Series 6800
(Daven Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Bal. "H" Input Pads	600 Ohms Base Impedance		Bal. "H" Output Pads
	Z	Db. Loss	
6831	500	3.77	6871
6832	500	5.00	6872
6833	600	0	6873
6834	250	8.74	6874
6835	250	10.00	6875
6836	200	9.96	6876
6837	200	10.00	6877
6840	50	16.63	6880
6841	50	20.00	6881

MANUFACTURERS' OR CONTRACTORS' DATA:
The Daven Company, 191 Central Avenue, Newark 4, New Jersey.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

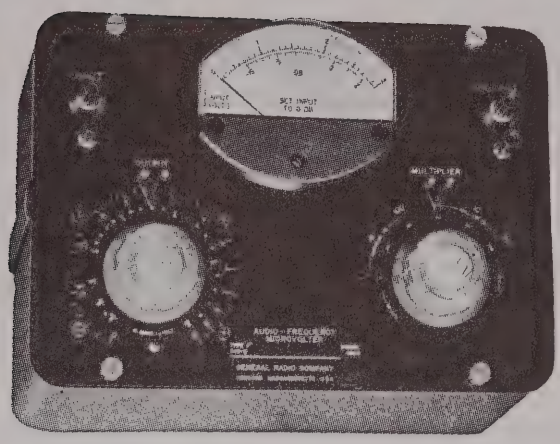
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator Network Matching Pads (Daven Series 6800)			1-3/8 dia.			

MICROVOLTER, AUDIO-FREQUENCY
Type No. 546-C
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment designed to measure and control audio frequency voltages. The unit is useful for response measurements of amplifiers, transformers and other audio equipment. The microvolter can be used to measure small voltages by substitution methods and also can be used to control direct voltages in conjunction with an external DC meter or by calibrating the internal meter.

RELATIONSHIP TO OTHER EQUIPMENT:

Used in conjunction with an audio frequency oscillator.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The instrument essentially consists of a constant-impedance attenuator and a voltmeter by means of which the input to the attenuator is standardized. A switch controls the output voltage in decade steps, while an

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Limited Standard	
STOCK NOS.		(ASO)R16A5940-18	
PROCUREM'T INFO.:			
PROCUREM'T COG.:	Navy	DESIGN COG.:	Commercial
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.2.1

MICROVOLTER, AUDIO-FREQUENCY
Type No. 546-C
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
individually calibrated dial provides continuous control over each decade. The meter is provided with both voltage and decibel scales.
Power Supply: None.
Frequency Range: 20 to 100,000 cycles per second.
Power Input: 2.2 volts across 600 ohms or 8 milliwatts.
Output Voltage Range: 0.5 microvolt to 1 volt.
Accuracy (Open-Circuit Output Voltage):
1 microvolt or greater, 20 to 20,000 cycles per second; ± (3% +0.5 microvolt).
100 microvolts or greater, 20,000 cycles per second or greater; ±5%.
Ratios of Output Voltages: ± (2% +0.5 microvolt), above 20 kilocycles per second this accuracy applies only at outputs above 100 microvolts.
Output Impedance: 600 ohms ±5%.
Input Impedance: 600 ohms, approximately.
Waveform Error: 0.2%.
Temperature Error: Necessary correction data furnished with instrument for temperatures of 65°F to 95°F.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, Baker Avenue, West Concord, Massachusetts; Contract No. N383s-40174A; Approximate Cost per Unit, $155.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Microvolter, Audio-Frequency General Radio 546-C					

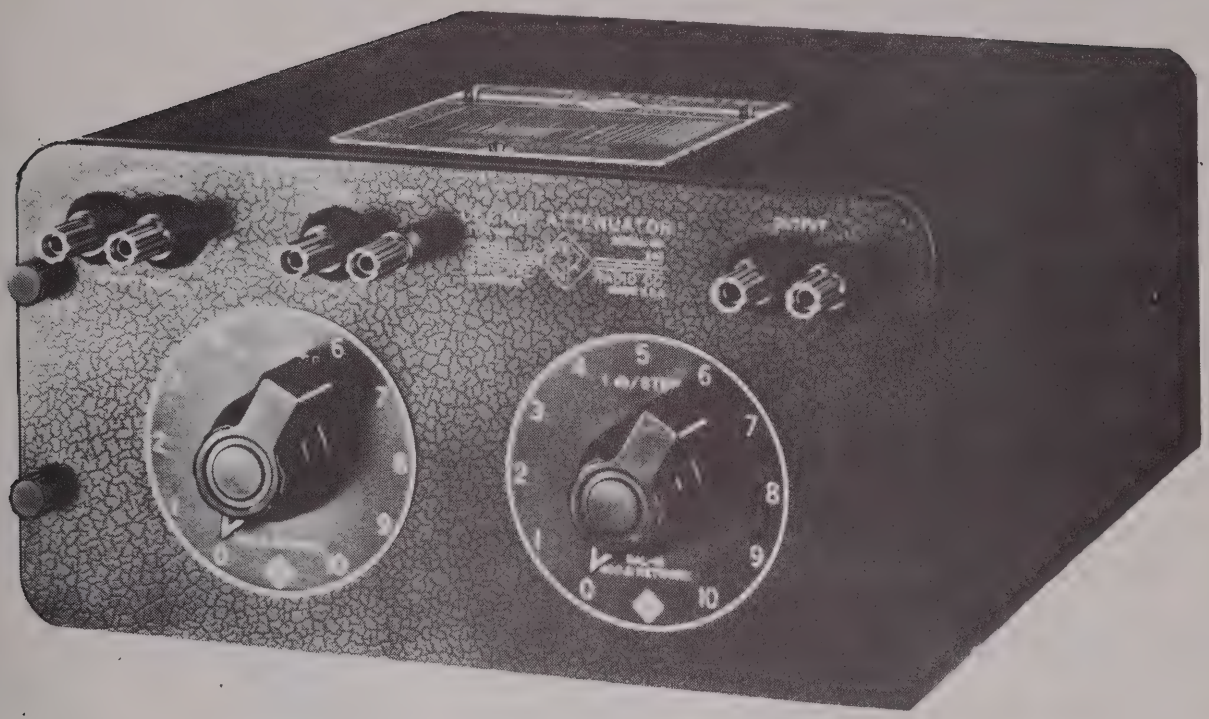
MICROVOLTER, AUDIO-FREQUENCY
Type No. 546-C
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Microvolter, Audio-Frequency General Radio 546-C	aluminum		7-1/8	10	6-1/8	6-1/2

110

DECADE ATTENUATOR
MODEL NO. 1450TA
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, decade attenuator used in power-level measurements, transmission-efficiency tests and in gain or loss measurements on transformers, filters, amplifiers, and similar equipment. It can also be used as a power level control in circuits not equipped with other volume controls. Two decade switches are calibrated in decibels.

RELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Sets AN/TRC-30 and AN/FRC-33.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of two General Radio Type 829 Decade Attenuator Units. Each decade consists of four pads series--connected by cam-operated switches arranged with positive detents. Each pad is shielded. Resistors are capacitance-compensated. The two units have balanced T type sections and are mounted in a single housing.

Power Supply: None.

Attenuation Range: 110 decibels in steps of 1 decibel.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment		General Radio 1450TA	

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DECADE ATTENUATOR
MODEL NO. 1450TA
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Maximum Input Power: 1 watt.

Impedance: 600 ohms.

Frequency Discrimination: Less than ±1% of the indicated value at frequencies below 200 kilocycles.

Accuracy: Each individual resistor is adjusted within ±0.25% of its correct value.

Terminals: Jack-top binding posts with 3/4" spacing, common terminal grounded to chassis; ground terminal provided.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Cambridge 39, Massachusetts; Approximate Cost per Unit, $190.00, January 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "M", October 1951.

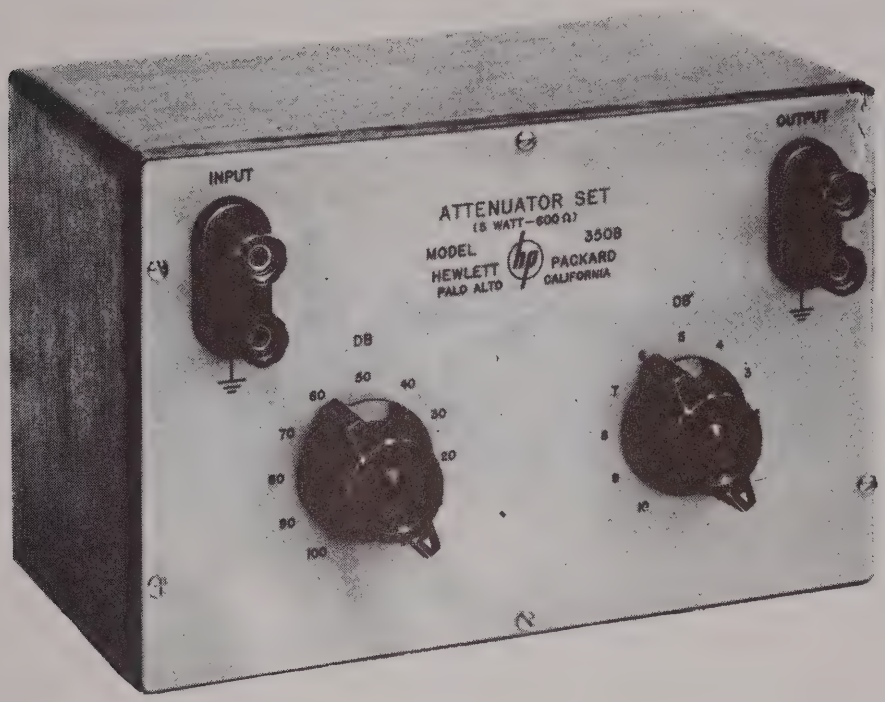
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Decade Attenuator Model No. 1450TA	1.8	12-1/4	19-1/2	10-3/4	17

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Attenuator Model No. 1450TA	Metal		5-3/4	10	12-1/4	10.75

ATTENUATOR SET
MODEL 350A
(Hewlett-Packard Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used to attenuate supersonic oscillators, measure gain and frequency response of amplifiers and measure transmission losses. Attenuation is indicated directly in decibels.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The attenuator is essentially two bridged-T circuits. Each circuit is made independently variable by use of a rotary switch. The high attenuator permits attenuation in increments of 10 decibels, the low attenuator permits attenuation in 1.0 decibel increments. Combination jack-binding posts are provided in the input and output circuits.

Power Supply: None.

Attenuation Range: 110 decibels in 1.0 decibel steps.

Impedance: 500 ohms.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Limited Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
- Electronics Test Equipment - Hewlett-Packard 350A			

ATTENUATOR SET
MODEL 350A
(Hewlett-Packard Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy (0 to 100 kilocycles per second):

10 Decibel Attenuator: ±0.125 decibel.

100 Decibel Attenuator: ±0.25 decibel to 80 decibels; ±0.5 decibel on the 90 and 100 decibel steps.

Power Capacity: 5 watts.

MANUFACTURERS' OR CONTRACTORS' DATA:

Hewlett-Packard Company, 1501 Page Mill Road, Palo Alto, California; Approximate Cost per Unit, $110.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

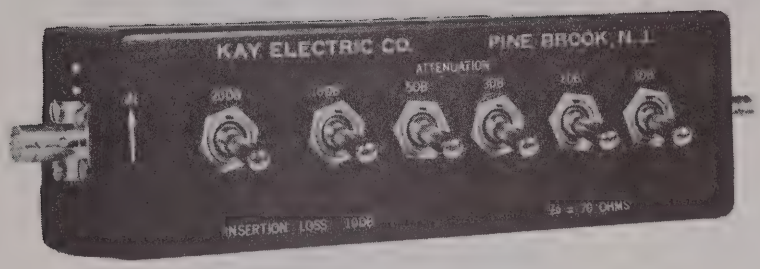
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator Set Hewlett-Packard 350A	metal		5-5/8	8-1/4	5-5/16	3

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator Set Hewlett-Packard 350A					7

STEP ATTENUATOR
MODEL NO. 20
(Kay Electric Company)



UNCTIONAL DESCRIPTION:

A portable, general purpose, high frequency attenuator for providing low output ignals and attenuating signals by known amounts.

ELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Sets AN/TRC-30 and AN/FRC-33, and Fire Control System IA-1.

LECTROMECHANICAL DESCRIPTION:

ower Supply: None.
requency Range: DC to 500 megacycles per second.
ttenuation Range: Total: 10 to 51 decibels.
Fixed: 10 decibels (insertion loss).
Variable: 41 decibels in 1 decibel steps.
witch Steps: 20, 10, 5, 3, 2, and 1 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075605-25		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.1	
	- Electronics Test Equipment -		Kay Electric No. 20

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

STEP ATTENUATOR
MODEL NO. 20
(Kay Electric Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Input and Output Impedance: 53.5 ohms.

Accuracy: Within ±10% of DB attenuation to 500 megacycles per second. Better accuracies at lower frequencies.

Input and Output Connectors: Female UG-185/U.

MANUFACTURERS' OR CONTRACTORS' DATA:

Kay Electric Company, Pine Brook, New Jersey; Approximate Cost per Unit $50.00, 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog A-51, 1952-53.

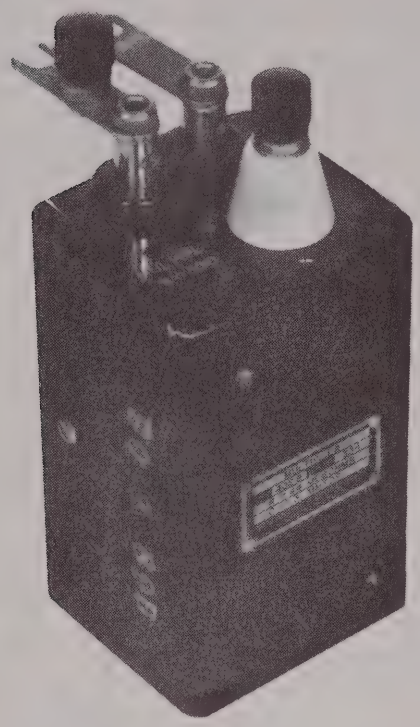
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Step Attenuator Model No. 20	Metal	7CAC-075605-25	2	8-1/4	1-1/2	2-1/2

MULTIPLIER
MODEL NO. 402A
(Ballantine Laboratories, Inc.)



UNCTIONAL DESCRIPTION:

A portable instrument used to extend the voltage range and increase the input im-edance of Electronic Multimeter ME-6/U (Ballantine Model 300 Electronic AC oltmeter).

ELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Set AN/GRC-28 and Radio Receiving Set AN/GRR-6.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of special series resistors of low temperature co-efficient with which are associated the proper capacity elements to compensate for the capacity of the multimeter.

Power Supply: None.

Frequency Range: Accurate to 150,000 cycles per second.

Multiplying Factor: X10.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-589255		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.2	
	- Electronics Test Equipment -		Ballantine 402A

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

MULTIPLIER
MODEL NO. 402A
(Ballantine Laboratories, Inc.)

ELECTROMECHANICAL DESCRIPTION. (Continued)
Voltage Range: Extends multimeter range to 1000 volts.
Input Impedance: Increases multimeter impedance to a resistance of 4 megohms shunted by a capacity of 8 micromicrofarads.

MANUFACTURERS' OR CONTRACTORS' DATA:
Ballantine Laboratories, Inc., Boonton, New Jersey; Approximate Cost per Unit $25.50, 1 July 1950.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog "Electronic Voltmeter and Accessories."

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Multiplier Model No. 402A		7CAC-589255	5-3/4	2-5/8	3-1/2	0.75

MULTIPLIER
MODEL NO. 402B
(Ballantine Laboratories, Inc.)

UNCTIONAL DESCRIPTION:

A portable instrument used to extend the voltage range and increase the input npedance of Electronic Multimeter ME-6/U (Ballantine Model 300 Electronic AC oltmeter).

ELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Set AN/GRC-28 and Radio Receiving Set AN/GRR-6.
Similar to Model No. 402A but with a larger multiplication factor.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Consists of special series resistors of low temperature coefficient with which are associated the proper capacity elements to compensate for the capacity of the multimeter.
ower Supply: None.
requency Range: Accurate to 10,000 cycles per second.
ultiplying Factor: X100.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-589265		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.2	
- Electronics Test Equipment -			Ballantine 402B

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

MULTIPLIER
MODEL NO. 402B
(Ballantine Laboratories, Inc.)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Voltage Range: Extends multimeter range to 10,000 volts.
Input Impedance: Increases multimeter impedance to a resistance of 40 megohms shunted by a capacity of 3 micromicrofarads.

MANUFACTURERS' OR CONTRACTORS' DATA:
Ballantine Laboratories, Inc., Boonton, New Jersey; Approximate Cost per Unit $25.50, 1 July 1950.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog "Electronic Voltmeter and Accessories."

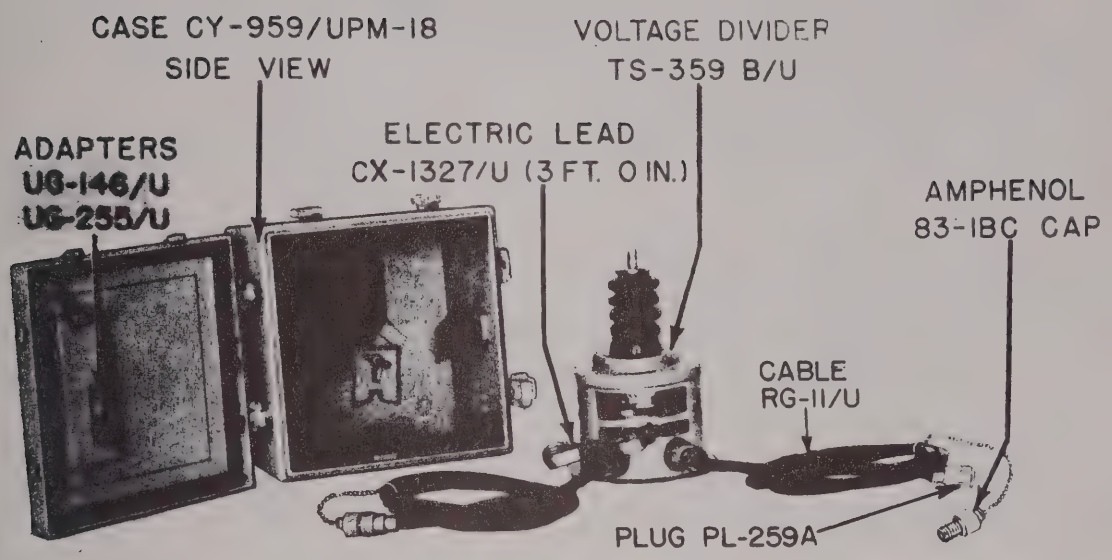
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Multiplier Model No. 402B		7CAC-589265	5-3/4	2-5/8	3-1/2	0.75

RADAR TEST SET AN/UPM-18



FUNCTIONAL DESCRIPTION:

A portable, general purpose, voltage divider used in conjunction with a synchroscope or cathode ray oscilloscope to measure or view output pulse from modulators of medium-power radar sets. A high voltage input lead is included. Two dividing ratios are available by connection to either of the two permanently attached output leads. The complete equipment is housed in a watertight transit case.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The divider itself consists of a housing for the electronic components, a ceramic bushing capacitor, a molded mica condenser, three ceramic condensers, two surge damping resistors, and two permanently connected output cables.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Substitute Standard		
STOCK NOS.	7CAC-801319-2187		
PROCUREM'T INFO.: Spec. MIL-R-4301 (USAF); USAF Exhibit ENG-280			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			AN/UPM-18

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

RADAR TEST SET AN/UPM-18

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None required.
Frequency Range: Above 5000 cycles per second, CW.
Input Signal: Pulse Duration: 0.5 to 10 microseconds.
Pulse Repetition Rate: Up to 1000 times per second.
Voltage Input, Maximum: 35,000 volts, peak.
Division Ratios: 50:1 and 200:1.
Input Capacitance: 42 micromicrofarads.
Waveform Decay: Not over 10%, with a 2 microsecond square wave applied to the voltage divider.
Division Accuracy: ±3%.
Temperature Range: -38° C. to +65° C.
Humidity Range: Up to 95% relative.
Altitude Range: Sea level to 10,000 feet, operating.
Sea level to 50,000 feet, non-operating.

MANUFACTURERS' OR CONTRACTORS' DATA:

Dynamic Electronics-New York, Inc., Glendale, Long Island, New York; Approximate Cost per Unit, $300.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-30UPM18-1 (Operation and Service Instructions).

SHIPPING DATA:

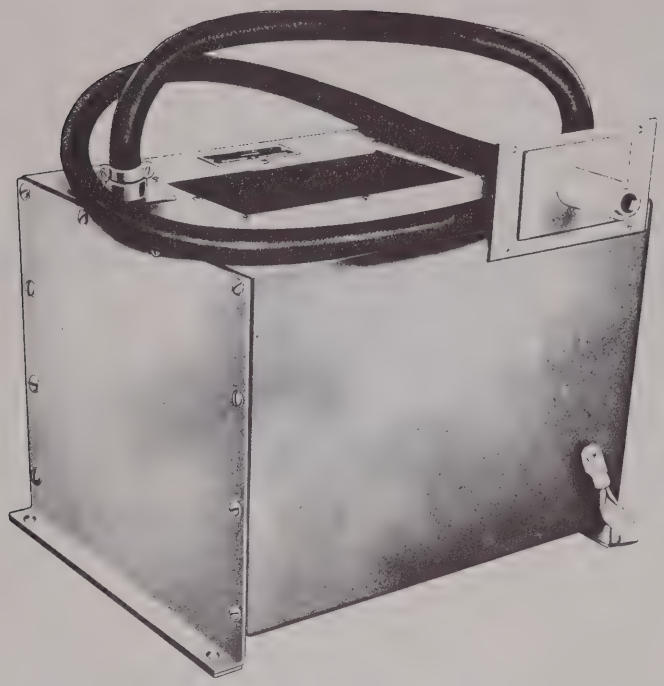
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Radio Test Set, AN/UPM-18 (Domestic Packed)	1.40	15-3/4	13-3/4	11	19

RADAR TEST SET AN/UPM-18

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Radar Test Set AN/UPM-18 Including	Aluminum	7CAC-801319-2187	15	12	10	15.0
1	Voltage Divider TS-359B/U	Aluminum		9	5-3/8 dia.		5.5
1	Adapter UG-146/U		8850-108800	1-3/4	3/4 dia.		
1	Adapter UG-255/U		8850-108880	1-5/16	5/8 dia.		
1	Electrical Lead CX-1327/U			36 long			
1	Case CY-959/UPM-18	Aluminum					
2	Output Cables: RF Cable RG-11A/U with Plug PL-259A/U and Amphenol type 83-1BC cap and chain.			60 long			

DUMMY LOAD, ELECTRICAL DA-67/U



FUNCTIONAL DESCRIPTION:

A portable, special purpose, electrical dummy load used to replace Type 4J50 magnetrons normally connected to the secondary winding of radar modulator output pulse transformers during checks of the pulse transformer output. A voltage divider in the dummy load attenuates the pulse for display on an oscilloscope. This dummy load is used to test modulators employed in Radar Sets AN/APQ-35, AN/APQ-41 and AN/APQ-50. The dummy load is equipped with mounting flanges and a grounding lug.

RELATIONSHIP TO OTHER EQUIPMENT:

Oscilloscope AN/USM-24 or equivalent is required but not supplied.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Peak Power Input: 300 kilowatts.
Average Power Input: 300 watts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.		(ASO)R16AN-DA67U	
PROCUREM'T INFO.: Dwg 51-C-4522, 55-A-7429			
PROCUREM'T COG.: Navy, ASO		DESIGN COG.: Navy, BuAer	
F.L.I.N.: 5985-295-7413		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			DA-67/U

DUMMY LOAD, ELECTRICAL DA-67/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Pulse Input Voltage: 22 kilovolts.
Input Impedance: 800 ohms.
Output Voltage: 86 volts.
Attenuation Factor: 254.
Accuracy: ±10%.

MANUFACTURERS' OR CONTRACTORS' DATA:
Westinghouse Electric Corporation, Baltimore, Maryland; Contract No. N383(s)-2178A; Approximate Cost per Unit, $192.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
NavAer 16-35DA67-501, Service Instructions with Parts List.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical DA-67/U	sheet steel	(ASO)R16AN-DA67U	16-3/16	14-1/8	15-7/8	
1	Cable Assembly						

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load, Electrical DA-67/U	4.7	23	21	17	13

TEST UNIT I-99

FUNCTIONAL DESCRIPTION:

A portable special purpose voltage divider test unit used to step down the high voltage from Keying Unit BC-402 or Radio Set SCR-270-DA in order that the output can be measured. Voltage output is displayed either on a test oscilloscope or on a high voltage meter, which must be used with this unit. This unit is used in organizational, field, and depot maintenance.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Two resistors are connected in series across the quantity to be measured. A capacitor is connected across the lower valued resistor to minimize the effects of undesired harmonics. The indicating instrument is connected across the lower valued resistor. This system operates as a voltage divider with the indicating instrument reading a voltage whose relationship to the quantity to be measured is known, but has a much lower value.

Power Supply: None.

Input Impedance: 50,000 ohms in series with a parallel combination of 1000 ohms and 1.0 microfarads.

Output Impedance: 1000 ohms in parallel with 1.0 microfarad.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-801319-2435		3F4470-99
PROCUREM'T INFO.:	Dwg. No. ES-D-8206-A		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, RADC
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.2.3
- Electronics Test Equipment -			I-99

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

TEST UNIT I-99

MANUFACTURERS' OR CONTRACTORS' DATA:
Espey Manufacturing Company, New York, New York.
Western Electric Company, 120 Broadway, New York, New York; Approximate Cost Per Unit, $50.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TM 11-1043.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Test Unit I-99 (Shelf Package)	1.30	15	15	10	32

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Test Unit I-99	Steel	7CAC-801319-2435 3F4470-99	11	11	6-1/2	20

VOLTAGE DIVIDER TS-89/AP

FUNCTIONAL DESCRIPTION:

A portable, general purpose test equipment used to measure in conjunction with an oscilloscope, video pulses between 200 and 20,000 volts in high impedance circuits. The divider is provided with a ratio switch (10:1 and 100:1) and two corresponding input circuits.

RELATIONSHIP TO OTHER EQUIPMENT:

Used with bombing, search, and fire control radar equipments.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The divider has two input circuits and the ratio and range of voltage to be measured determines which circuit to be used. The circuits are simple combinations of series capacitors connected as a voltage divider. Resistors are placed across the output as bleeders to prevent the buildup of high voltages.

Power Supply: None required.

Frequency Range: 150 cycles per second to 5 megacycles per second (video).

Operating Range: 100:1 for 2000 to 20,000 volts; 10:1 for 200 to 2000 volts.

Input Impedance: 2000 ohms in series with 10 micromicrofarads.

Output Impedance: 4 megohms shunted by 20 micromicrofarads.

Pulse Duration: 1 to 100 microseconds.

Accuracy: ±15% of designated ratio and ±1 decibel over the frequency range. (Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Limited Standard		
STOCK NOS.	7CAC-926655	ASO-R16-AN-TS-89/AP	3F4325-89
PROCUREM'T INFO.: USAF, Spec. MIL-V-4306			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, ARL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			TS-89/AP

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-89/AP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Temperature Range: -40° F. to +120° F.

MANUFACTURERS' OR CONTRACTORS' DATA:
United Cinephone Corporation, Torrington, Connecticut; Contract No. 1175-44, 13 May 1944; Approximate Cost per Unit, $122.00; Contract No. 923-45RA, 16 December 1944; Approximate Cost per Unit, $60.50.

Western Electric Company, 120 Broadway, New York, New York; Contract No. 11925-43, 28 December 1943; Approximate Cost per Unit, $144.00; Contract No. 432-45-RA, 14 September 1944; Approximate Cost per Unit, $78.31; Contract No. 949-44, 16 October 1944; Approximate Cost per Unit, $132.95.

Robson Burgess; Contract No. 2175-45AR, 31 March 1945; Approximate Cost per Unit, $57.50.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-35TS89-3 (Maintenance Instruction).
TO 16-35TS89-11 (Operation and Service Instructions).
TO 16-35TS89-14 (Parts Catalog).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Voltage Divider TS-89/AP (Shelf Package, Water-Resistant Carton)	0.25	12	6	6	6

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-89/AP Including:	Metal	7CAC-926655 R16-AN-TS-89/AP 3F4325-89	10-1/4	4-3/4	4-1/4	
1	Book of Instructions		-327879232 3F4325-89/B1				
1	Test Lead CX-1903/U			16 long	1/2 dia.		0.5
						Total:	4

VOLTAGE DIVIDER TS-89A/AP
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-89A/AP)

1.Test Set Proper. 2.Test Lead CX-1903/U.

FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment which is used in conjunction with an oscilloscope to measure video pulse voltages in high impedance circuits. It is provided with a ratio switch and two corresponding input circuits. It is used in field and depot testing.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment has two input circuits. The ratio and range of voltage to be measured determines which circuit is to be used. The circuits are resistive-capacitive type unbalanced "Pi" networks, connected as voltage dividers. Resistors in these networks are composition type. Resistors are placed across the output as bleeders to prevent the buildup of high voltages.

Power Supply: None.

Frequency Range: 150 cycles per second to 5 megacycles per second (video).

Input Voltage Ranges: 200 to 2000 volts; 2000 to 20,000 volts.

Attenuation Ratios: 10:1 for 200 to 2000 volts; 100:1 for 2000 to 20,000 volts.

Input Impedance: Approximately 2000 ohms in series with 10 micromicrofarads.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-926656		3F4325-89A
PROCUREM'T INFO.: Spec. MIL-V-4306 (USAF), dated 18 June 1951			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, ARL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			TS-89A/AP

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-89A/AP
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-89A/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Output Impedance: Approximately 4 megohms in parallel with 20 micromicrofarads

Pulse Duration: 1 to 100 microseconds.

Frequency Response: ±1 decibel.

Accuracy: ±15% of designated ratio.

Temperature Range: -40°C. to +55°C., operational; -65°C. to +85°C., non-operational

Humidity Range: Up to 90%, operational.

Altitude Range: Sea level to 5,000 feet, operational; sea level to 50,000 feet, non operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Century Metalcraft Corporation, Van Nuys, California; Contract No. AF 33(600) 8715, dated 20 February 1952; Approximate Cost per Unit, $48.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS89-11 (Service Instructions).

TO 16-35TS89-14 (Illustrated Parts Breakdown).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Voltage Divider TS-89A/AP (Shelf Package-Water Resistant Carton)	0.25	12	6	6	6

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-89A/AP Including:	Brass	7CAC-926656 3F4325-89A	10	5-1/2	3-1/2	
1	Book of Instructions						
1	Test Lead CX-1903/U			16 long	1/2 dia.		0.5
1	Capacitor Assembly C101						
						Total:	3

VOLTAGE DIVIDER TS-89B/AP
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-89B/AP)

'UNCTIONAL DESCRIPTION:

A portable, general purpose equipment which is used in conjunction with an scilloscope to measure video pulse voltages in high impedance circuits. It is proided with a ratio switch and two corresponding input circuits. It is used in field nd depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to TS-89A/AP except that Test Lead CX-2490/U is used with TS-89B/AP nd Test Lead CX-1903/U is used with TS-89A/AP.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment has two input circuits. The ratio and range of voltage to be measured determines which circuit is to be used. The circuits are resistive-capacitive type unbalanced "Pi" networks, connected as voltage dividers. Resistors in these networks are composition type. Resistors are placed across the output as bleeders to prevent the buildup of high voltages.

'ower Supply: None.

'requency Range: 150 cycles per second to 5 megacycles per second.

nput Voltage Ranges: 200 to 2000 volts and 2000 to 20,000 volts.

ttenuation Ratios: 10:1 for 200 to 2000 volts; 100:1 for 2000 to 20,000 volts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-075609-26		3F4325-89B
PROCUREM'T INFO.:	Spec. MIL-V-4306 (USAF), dated 18 June 1951		
PROCUREM'T COG.:	USAF	DESIGN COG.: USAF, ARL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-89B/AP
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-89B/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Voltage Breakdown: 100:1 circuit will withstand 30,000 ±5% volts rms for extended periods.
10:1 circuit will withstand 3,000 ±5% volts rms for extended periods.

Input Impedance: Approximately 2000 ohms in series with 10 micromicrofarads.

Output Impedance: Approximately 4 megohms in parallel with 20 micromicrofarads.

Frequency Response: ±1 decibel.

Accuracy: ±15% of voltage ratio.

Temperature Range: -40°C. to +55°C., operational; -65°C. to +85°C., non-operational.

Humidity Range: Up to 90%, operational.

Altitude Range: Sea level to 5,000 feet, operational; sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Mercury Electronics Corporation, Red Bank, New Jersey; Contract AF 33(600) 20486.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

33AA22-3-12 (Service Instructions).
33AA22-3-14 (Illustrated Parts Breakdown).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Voltage Divider TS-89B/AP (Shelf Package-Water Resistant Carton)	0.25	12	6	6	6

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-89B/AP	Brass	7CAC-075609-26	10	5-1/2	3-1/2	
	Including:		3F4325-89B				
1	Test Lead CX-2490/U			16 long			0.5
1	Capacitor Assembly C-2						
						Total:	3

VOLTAGE DIVIDER TS-98/AP

'UNCTIONAL DESCRIPTION:

A ground portable unit used to measure and observe voltages of the modulator air nits of Radio and Radar Sets in the AN/APQ series, without exposing the operator ɔ dangerous voltages. It measures low DC rectifier voltages, plate and screen DC upply, and 115 AC voltage supply for oil unit (400 cycles per second). It provides termination which replaces the oil unit, enabling the air unit to operate without the il unit for voltage measurement purposes.

.ELATIONSHIP TO OTHER EQUIPMENT:

;LECTROMECHANICAL DESCRIPTION:

:ircuit Information: A series parallel connection of six resistors is used to provide a means of stepping down the output voltage of the modulator under test. The actual value of the step down ratio is determined by the comparative values of the resistors involved, the voltmeter resistance and the scale used in making measurements.

'ower Supply: None required.

'requency Range: Video.

ıput Impedance: 800 ohms.

'erminal Connections:

(a) To measure low voltage rectifier output of modulator; apply rectifier output to pin jacks J-507 and J-509 and measured output at "TERM 1" and "TERM 3."

Voltage Reduction: 700:70 approximately.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-688315	SNSN-F16-N-30826-1022	3F15500
PROCUREM'T INFO.:	Navy Spec. No. OS-3087		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Arm.
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.2.3
- Electronics Test Equipment -			TS-98/AP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-98/AP

ELECTROMECHANICAL DESCRIPTION: (Continued)

(b) To measure the output pulse of the modulator; apply pulse voltage to pin jacks J-507 and J-509 and measure at "PULSE" positive and negative.
Voltage Reduction: 800:35 approximately.

(c) To measure the plate and screen voltages of the modulator; apply voltage at pin jacks J-509, J-508 and measure at "TERM 2" and "TERM 3."
Voltage Reduction: 1300:130.

(d) To measure filament and line voltages of air unit modulator; use "TERM 4", "TERM 5", and "TERM 6."
Connections to pin jacks are normally made by removing the oil unit and placing the voltage divider over the exposed banana plugs of the air unit.

Temperature Range: -40° F. to +130° F.

MANUFACTURERS' OR CONTRACTORS' DATA:

Western Electric Company, 120 Broadway, New York, New York; Contract No. NOrd-3456; Approximate Cost per Unit, $100.00. Contract No. 342-44, 31 December 1943; Approximate Cost per Unit, $259.10. Contract No. 992-45RA, 27 January 1945; Approximate Cost per Unit, $61.90.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS98-3 (Maintenance Instructions).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Voltage Divider TS-98/AP (Shelf Package, Water-Resistant Carton)	0.25	12	6	6	4.5

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-98/AP	Metal	7CAC-688315 3F15500	10	4	3-1/2	3
1	Instruction Book		6D9810-98				

VOLTAGE DIVIDER TS-265/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument designed to step down high video ulse voltages in order that they may be observed on a standard oscilloscope or synhroscope. All measurements are made on the associated test equipment.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Contains two input circuits of different capacitances in series which provide two ratios and voltage ranges.

ower Supply: None.

oltage Range: 0 to 50,000 volts.

oltage Ratios: 100 to 1 for voltages from 5000 to 50,000 volts. 10 to 1 for voltages from 0 to 5000 volts.

nput Impedance: High.

utput Impedance: High.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	1690-329001386	N16-N-30826-1067	3F4325-265
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			TS-265/UP

s project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-265/UP

MANUFACTURERS' OR CONTRACTORS' DATA:
Sperry Gyroscope, Great Neck, Long Island, New York.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TM 11-1241 (Instruction Book).
TM 11-1552 (Instruction Book).

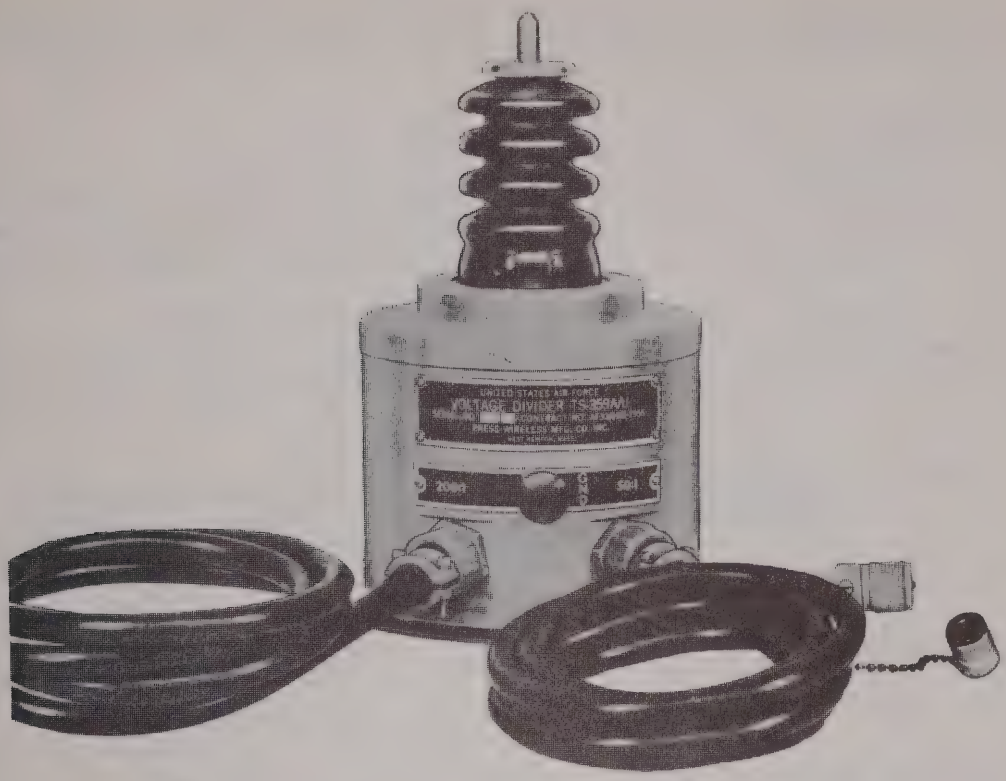
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-265/UP	Metal	1690-329001386 N16-N-30826-1067 3F4325-265	10	5	3	4
1	Ground Cable (Permanently Attached)						
1	High Voltage Cable			36 long			
1	High Voltage Cable			18 long			
1	Video Cable			120 long			
1	Adapter						

VOLTAGE DIVIDER TS-359A/U



FUNCTIONAL DESCRIPTION:

A portable voltage divider used in conjunction with a synchroscope or cathode ray oscilloscope to measure or view output pulses from modulators of medium - power radar sets. Suitable permanently attached output cables are provided for two output ratios (200:1 and 50:1). The unit is not provided with indicators or controls.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: A series parallel connection of capacitors with two output cords tapped into the circuit at different points provides the means for voltage division. Since the capacitance of the output cables and the input capacitance of the measuring instrument are part of the total capacitance that determines the divider ratio, any change in the type or length of the output cable or in the input capacitance of the measuring equipment will effect the divider ratios.

Power Supply: None required.

Frequency Range: Above 5000 cycles per second, pulse or CW.

Input Voltage Maximum: 35 kilovolt peak at 200:1 terminal.
10 kilovolt peak at 50:1 terminal.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Limited Standard		
STOCK NOS.	7CAC-926661		3F4325-359A
PROCUREM'T INFO.: Exhibit WLENG 2079, dated 26 October 1948.			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			TS-359A/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-359A/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Input Capacitance: 20 micromicrofarads approximately for both 200:1 and 50:1 terminal.

Temperature Range: -35° C. to +65° C.

Relative Humidity Range: 0 to 95%.

Accuracy: Divider Ratio is affected by: Less than 0.5% for changes in frequency between 100 kilocycles and 10 megacycles, less than 1% for ambient temperatures from -35° C. to +65° C., and less than 5% for relative humidities from 0 to 95%.

MANUFACTURERS' OR CONTRACTORS' DATA:

Press Wireless Laboratories, Inc., West Newton, Massachusetts; Contract Nos. AF 33(038)7955 and AF 33(038)15832, 20 September 1950; Approximate Cost per Unit, $175.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 1635TS359-2 (Operation and Service Handbook).
TO 1635TS359-3 (Overhaul Instructions).
TO 1635TS359-4 (Parts Catalog).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Voltage Divider TS-359A/U (Domestic Package)	1.40	11	13-3/4	15-3/4	19

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-359A/U	Metal	7CAC-926661 3F4325-359A	9	6-1/4 dia.		5.5
2	Cord RG-11/U		3300-132335587 1F425-11	60 long			

VOLTAGE DIVIDER TS-453/U
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-453/U)

UNCTIONAL DESCRIPTION:

A portable, general purpose depot test equipment, used to divide high voltage ılses of radar modulators. It is designed for use with a synchroscope to measure r view pulses which are too great in magnitude to be brought directly to a synchro-cope.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Employed in this equipment is a conventional, capacity voltage-divider circuit, incorporating a special vacuum capacitor.

ower Supply: None.

requency Range, Input: One microsecond pulse repeated 1 to 1000 times per sec-ond.

oltage Input: 200 volts to 100 kilovolts.

ivision Ratios: 500:1 and 100:1 for 100 kilovolts input; 10:1 for 2 kilovolts input.

ıput Capacitance: 20 micromicrofarads for input voltages between 2 kilovolts and 100 kilovolts; 180 micromicrofarads for input voltages up to 2 kilovolts.

eviation: ±2%.

emperature Range: -45° C. to +65° C.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-363974		
PROCUREM'T INFO.: USAF Spec. MIL-V-4696 (USAF), 25 May 1953.			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
- Electronics Test Equipment -			TS-453/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

VOLTAGE DIVIDER TS-453/U
(MULTIPLIER, ELECTRICAL INSTRUMENT, TS-453/U)

MANUFACTURERS' OR CONTRACTORS' DATA:

Press Wireless Manufacturing Company, West Newton, Massachusetts; USAF Contract Nos. AF 33(038)8163 and AF 33-038-49-1722.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Voltage Divider TS-453/U	Alum-inum	7CAC-363974	22	9-1/2 dia.		11
1	Case CY-775/U	Alum-inum		24	11	9	
1	Cord CG-409/U		7CAC-170265-2655	120 long			
1	Electrical Lead CX-1327/U						
2	Special Purpose Cable Assembly CX-1328/U			one 18 long one 36 long			
2	Power Cable Assembly CX-1329/U			one 18 long one 36 long			
1	Shock-Mount Frame						
						Total:	38

DECADE VOLTAGE DIVIDER
MODEL 187
(Daven Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used at overhaul and repair depots to supply accurate voltage ratios. The equipment is used for attenuating the input voltage of amplifiers or high impedance circuits by a known ratio. The instrument may also be connected for use as a decade resistance box. Ratio is indicated by calibrated dials located on the front panel of the equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The instrument is basically the equivalent of two decade resistance boxes. The input to the divider is connected across both series-connected decades, while the output of the divider is across only one decade. The decades are ganged in such a manner that an increase in the resistance of the output decade results in the same amount of resistance decrease in the input decade. In this way the input impedance remains constant while the output

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:	Navy	DESIGN COG.:	Commercial
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.2.3

DECADE VOLTAGE DIVIDER
MODEL 187
(Daven Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
impedance is varied through known ratios of the input impedance.
Power Supply: None.
Voltage Ratio Range: 0.001 to 1000 in 0.001 steps.
Accuracy: ±0.25%.
Frequency Characteristics: 0 to 50,000 cycles per second.
Maximum Input Voltage: 230 volts, AC.
Temperature Coefficient: 0.002% per degree Centigrade maximum at normal room temperature.

MANUFACTURERS' OR CONTRACTORS' DATA:
Daven Company, 191 Central Avenue, Newark 4, New Jersey.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

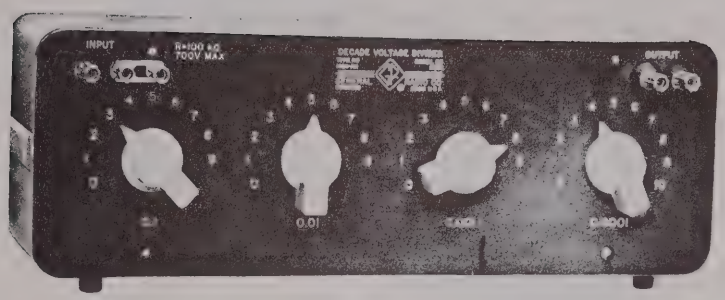
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Voltage Divider Daven 187	metal		6	11-1/2	6	6

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Voltage Divider Daven 187					

DECADE VOLTAGE DIVIDER
MODEL 1454-A
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used to provide a means of accurately determining voltage transmission ratios by direct comparison or null methods. Test results are indicated on four calibrated decade resistance dials.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Decade voltage division is accomplished by four decade resistors connected in a Kelvin-Varley circuit. A resistor is provided to compensate for voltage drop in internal wiring and switches.

Power Supply: None.

Voltage Ratio: 0.0001 to 1.0000 in 0.0001 steps.

Accuracy: ±0.04% of indicated ratio for input voltages below 120 volts.

Input Voltage: 230 volts rms or DC, maximum; for maximum accuracy, AC input must be limited to 120 volts rms.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: USAF — DESIGN COG.: Commercial

F.I.I.N.: 6625-602-2087 — FUNCTIONAL CLASS. NO.: 12.2.3

- Electronics Test Equipment - General Radio 1454-A

DECADE VOLTAGE DIVIDER
MODEL 1454-A
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Linearity: Better than ±0.02% of full scale setting.

Frequency Characteristics: Less than 0.1% error from 0 to 20,000 cycles per second when less than 50 micromicrofarads of external capacitance is connected across output terminals.

Input Resistance: 10,000 ohms.

Resistor Temperature Coefficient: Less than ±0.002% per degree C.

Output Resistance: Varies with output setting 0 to 2700 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusettes; Approximate Cost per Unit, $150.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

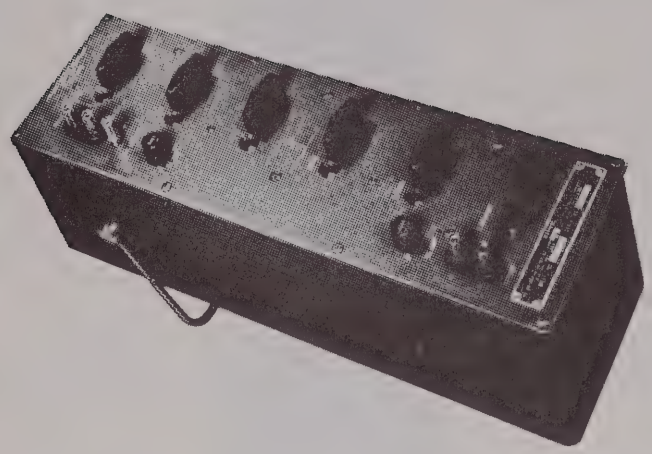
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Decade Voltage Divider General Radio 1454-A	alu-mi-num		5	15-3/4	5-1/4	7-1/4

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Decade Voltage Divider General Radio 1454-A					

AC VOLTAGE DIVIDER
MODEL RT-5
(Gertsch Products, Incorporated)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used as an AC voltage divider. The unit may be employed as the ratio arm of a bridge or as an AC potentiometer. The equipment is used to check resolvers, servos, transformers and computers. Test results readable to six significant figures are obtained from five decade dials and a one-turn potentiometer calibrated from zero to ten.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The voltage divider consists essentially of two variable tapped, toroidally wound autotransformers. Rotary switches permit the selection of autotransformer outputs and indicate output voltage ratios. Accuracy of the indicated ratio is dependent upon the external load.

Power Supply: None.

Frequency Range: 50 to 10,000 cycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: USAF DESIGN COG.: Commercial

F.L.I.N.: 5950-605-3105 FUNCTIONAL CLASS. NO.: 12.2.3

AC VOLTAGE DIVIDER
MODEL RT-5
(Gertsch Products, Incorporated)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy of Indicated Ratio: $\pm(0.001\% + \frac{0.0001\%}{R})$ from 50 to 3000 cycles per second, $\pm(0.01\% + \frac{0.0001\%}{R})$ from 3000 to 10,000 cycles per second; where R is the indicated ratio.

Input Voltage (RMS): 0.35 times frequency in cycles per second, 350 volts, maximum above 1000 cycles per second.

Phase Shift: 0.05 milliradians nominal.

Resolution: Continuous.

Effective Series Impedance: Resistance, 3 ohms; inductance, 75 microhenries.

Approximate Input Impedance: 150 henries.

MANUFACTURERS' OR CONTRACTORS' DATA:

Gertsch Products, Incorporated, 3211 South La Cienega Boulevard, Los Angeles 16, California.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	AC Voltage Divider Gertsch RT-5	metal		6	6-3/4	17	

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	AC Voltage Divider Gertsch RT-5					23

AC VOLTAGE DIVIDER
MODEL RT-9
(Gertsch Products, Incorporated)

'UNCTIONAL DESCRIPTION:

A portable, general purpose equipment used as an AC voltage divider. The nit may be employed as the ratio arm of a bridge or as an AC potentiometer, and nay be used to check resolvers, servos, transformers and computers.

:ELATIONSHIP TO OTHER EQUIPMENT:

:LECTROMECHANICAL DESCRIPTION:

:ircuit Information: The voltage divider is essentially a variable tapped autotransformer. Each autotransformer output is varied by a heavy duty rotary switch; and voltage division is indicated on the dials which are calibrated from zero to nine. Indications readable to six significant figures are obtained from five decade dials and a one-turn potentiometer calibrated from zero to ten. Accuracy of the indicated ratio is dependent upon the distributed parameters within the equipment.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	

AC VOLTAGE DIVIDER
MODEL RT-9
(Gertsch Products, Incorporated)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None.

Frequency Range: 30 to 1000 cycles per second.

Divider Range: Five decades calibrated 0 to 9 with multiplying factors of 0.00001, 0.0001, 0.001, 0.01, 0.1; potentiometer calibrated 0 to 10 in increments of 0.5.

Accuracy of Indicated Ratio: $\pm (0.001\% + \frac{0.0001\%}{R})$, where R is the indicated ratio.

Input Voltage: 2.5 times frequency in cycles per second, maximum; 350 volts maximum above 140 cycles per second.

Phase Shift: 0.05 milliradians, nominal.

Resolution: Continuous.

Terminal Linearity: 0.001%.

Effective Series Impedance: Resistance, 4.0 ohms; inductance, 350 microhenries.

Input Inductance: 500 henries.

MANUFACTURERS' OR CONTRACTORS' DATA:

Gertsch Products, Incorporated, 3211 South La Cienega Boulevard, Los Angeles 16, California.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

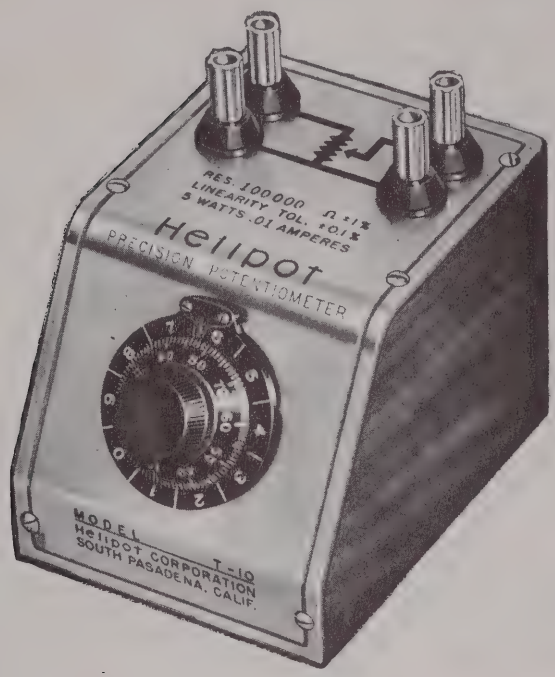
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	AC Voltage Divider Gertsch RT-9	metal		17	9-1/2	8	

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	AC Voltage Divider Gertsch RT-9					40

LINEAR VARIABLE RESISTANCE
MODEL T-10
(The Helipot Corporation)



UNCTIONAL DESCRIPTION:

A portable, general purpose, variable resistance used to simulate a load on the ystem to check the output of the power supply when testing Interceptor Guidance roup AN/GPA-6. It can be used either as a potentiometer or a rheostat for test-g or calibrating meters, amplifiers, oscilloscopes, and similar equipment. Two oncentric dials provide a decimal indication of the total resistance or voltage.

ELATIONSHIP TO OTHER EQUIPMENT:

This equipment can be obtained with total resistances varying from 10 to 100,000 ms.

LECTROMECHANICAL DESCRIPTION:

ower Supply: None.
otal Resistance: 1000 ohms.
ower Rating: 5 watts.
urns of Wire: 5900.
otal Rotation: 3600° (10 turns).

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.:		DESIGN COG.: Commercial	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
	- Electronics Test Equipment -		Helipot T-10

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

LINEAR VARIABLE RESISTANCE
MODEL T-10
(The Helipot Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Minimum Resistance Increment: 0.174.
Current Capacity: 0.070 amperes.
Temperature Coefficient: ±0.000015.
Linearity Accuracy: ±0.1%.
Overall Resistance Tolerance: ±1.0%.

MANUFACTURERS' OR CONTRACTORS' DATA:

The Helipot Corporation, South Pasadena, California; Approximate Cost per Unit, $32.50, 1 March 1950.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Bulletin 106A.
Manufacturer's Bulletin 106.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Linear Variable Resistance Model T-10	Walnut Aluminum Panel		3-7/8	3-1/16	4-1/4	3

LINEAR VARIABLE RESISTANCE
MODEL T-10A
(The Helipot Corporation)

'UNCTIONAL DESCRIPTION:

A portable, general purpose, variable resistance used to simulate a load on the ystem to check the output of the power supply when testing Interceptor Guidance roup AN/GPA-6. It can be used either as a potentiometer or a rheostat for test-ng or calibrating meters, amplifiers, oscilloscopes, and similar equipment. A 0-turn duodial provides a decimal indication of the total resistance or voltage.

.ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Model T-10 except that the "A" model has the 10-turn duodial.

;LECTROMECHANICAL DESCRIPTION:

'ower Supply: None.
'otal Resistance: 1000 ohms.
'ower Rating: 5 watts.
'urns of Wire: 5000.
'otal Rotation: 3600° (10 turns).

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.3	
	- Electronics Test Equipment -		Helipot T-10A

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

LINEAR VARIABLE RESISTANCE
MODEL T-10A
(The Helipot Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Minimum Resistance Increment: 0.200 ohm.
Current Capacity: 70 milliamperes.
Temperature Coefficient: ±0.00002.
Linearity Accuracy: ±0.1%.
Overall Resistance Tolerance: ±1.0%.

MANUFACTURERS' OR CONTRACTORS' DATA:
The Helipot Corporation, South Pasadena, California; Approximate Cost per Unit, $32.50, 1 March 1950.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Bulletin.

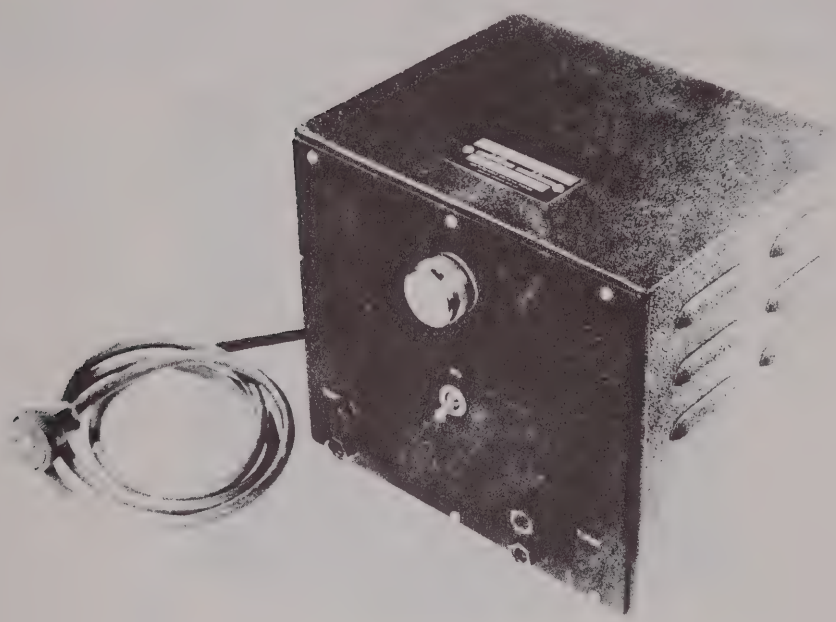
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Linear Variable Resistance Model T-10A	Walnut Aluminum Panel		3-7/8	3-1/16	4-1/4	3

BANDPASS FILTER
Part No. 13656-1-A
(Eclipse-Pioneer Division of Bendix Aviation Corporation)



UNCTIONAL DESCRIPTION:

A portable, general purpose equipment designed primarily to eliminate harmonics of a 400 cycle per second signal.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment is comprised of an electron-tube bandpass filter circuit designed to achieve sharp cutoff above and below the rated frequency. A gain control provides a means of maintaining unity gain of the filter. An on-off switch controls the primary power and a panel lamp indicates when power is applied. Connection to the input and output circuits is provided by binding posts.

ower Supply: 115 volts, AC, 60 cycles per second.

requency: 400 cycles per second.

utput Attenuation: 2% of input signal at 100 and 1200 cycles per second.

oltage Range: 0 to 0.5 volts, approximately.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.		(ASO)R88PR-13656-1-A	
PROCUREM'T INFO.: Drawing 13656-1-A			
PROCUREM'T COG.: Navy, BuAer		DESIGN COG.: Commercial	
F.I.I.N.: 6610-096-1140		FUNCTIONAL CLASS. NO.: 12.2.4	
- Electronics Test Equipment -			E.-P. 13656-1-A

BANDPASS FILTER
Part No. 13656-1-A
(Eclipse-Pioneer Division of Bendix Aviation Corporation)

MANUFACTURERS' OR CONTRACTORS' DATA:
Eclipse-Pioneer Division, Bendix Aviation Corporation, 43 Williams Avenue, Teterboro, New Jersey; Contract No. N383-37051A; Approximate Cost per Unit, $330.00.

TUBE COMPLEMENT:
1 6J5, 1 6X5.

REFERENCE DATA AND LITERATURE:
1-13656 (Manufacturer's Publication).

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Bandpass Filter Eclipse-Pioneer 13656-1-A	metal		8	8	7	

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Bandpass Filter Eclipse-Pioneer 13656-1-A					

E.-P. 13656-1-A - Electronic Test Equipment -

FILTER, LOW PASS
(WAVE FILTER)
Model No. 830-E
(General Radio Company)

FUNCTIONAL DESCRIPTION:

A portable general purpose filter used for the elimination of harmonics from distorted waveforms, for the isolation of specific components of complex waveforms, and to remove voltages of undesired frequencies from measuring and communication circuits.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This filter consists of two sections which cooperate to give a sharp cutoff as well as a high discrimination against frequencies outside the pass band. Both soldering lugs and jack-top binding posts are provided for connecting.

Power Supply: None.

Impedance: 500 ohms.

Cutoff Frequency: 1000 cycles per second.

Attenuation: Less than 3 decibels at cutoff frequency.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.2.4	
- Electronics Test Equipment -			General Radio 830-E

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FILTER, LOW PASS
(WAVE FILTER)
Model No. 830-E
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Voltage Limit: Voltages up to approximately 3 volts at any frequency may be applied to the filter without significantly altering the response curves. At higher voltage levels, slight shift in the location of the attenuation peak may be expected.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, 275 Massachusetts Avenue, Cambridge, Massachusetts; Approximate Cost per Unit, $35.00.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog, Series "M", October 1951

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Filter, Low Pass General Radio Model No. 830-E	0.34	12	6-1/2	7	7.0

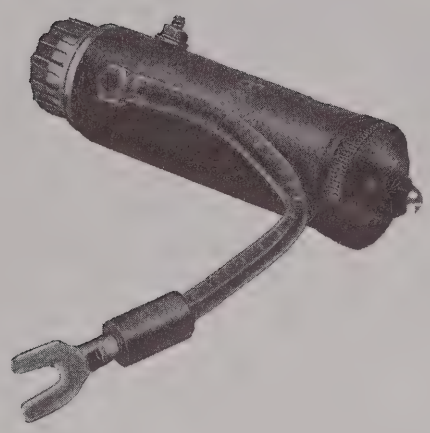
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Filter, Low Pass General Radio Model No. 830-E	Steel		4-1/8	3-9/16	4	3.5

12.3 DISTRIBUTED NETWORKS

160

ANTENNA A-28
(DUMMY LOAD, ELECTRICAL, A-28)



UNCTIONAL DESCRIPTION:

A portable, phantom antenna used to test Radio Sets AN/TRD-4 and AN/VRC-3. ıe end of the case is closed by a screwed-in plastic cap; the other end is closed a knurled metal cap which contains a threaded plug. A binding post is mounted the side of the case with the ground lead attached. An additional binding post is ovided on the side of the case to accommodate the signal lead from the signal gen- ·ator.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

.rcuit Information: The unit consists of a fixed resistor, capacitor, coil, and a lamp (LM-52) in parallel with a portion of the coil.

›wer Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
'YPE CLASS.			
TOCK NOS.	8400-520323		2A275-28
'ROCUREM'T INFO.:	Army Spec. 71-1624		
'ROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Rome
'.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 1

' project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

ANTENNA A-28
(DUMMY LOAD, ELECTRICAL, A-28)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 40 to 48 megacycles per second.
Power Input: 1.2 watts.
Capacitance: 15 to 18 micromicrofarads.

MANUFACTURERS' OR CONTRACTORS' DATA:
Dayton Acme Company, Cincinnati, Ohio; Part No. PL-6071.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-40IE9-5 (TM 11-5026) (Instruction Book for IE-9-C).

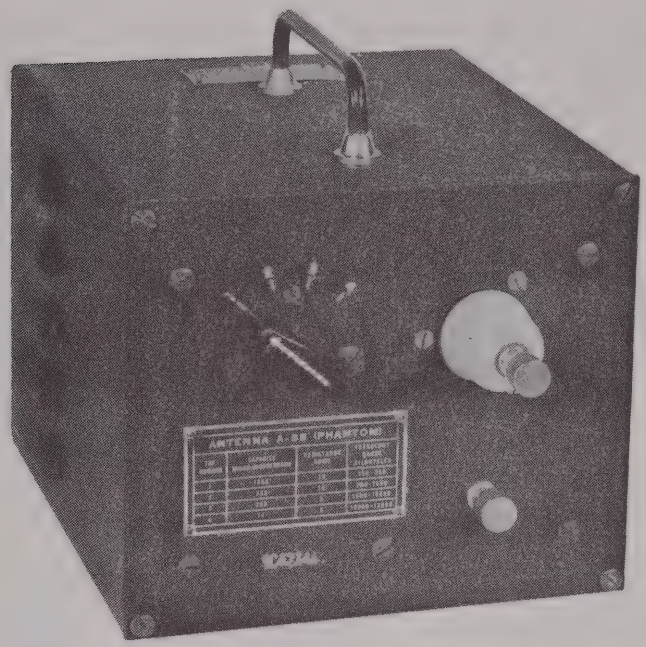
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Antenna A-28	Steel	8400-520323 2A275-28	3-5/8	1-1/8 dia.		0.5

ANTENNA A-58
(DUMMY LOAD, ELECTRICAL, A-58)



UNCTIONAL DESCRIPTION:

A portable, general purpose, dummy antenna used for tuning bench set-ups of me-um frequency transmitters. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Equipment contains four combinations of resistance and ca-pacitance and a four position switch with the following values:

Switch	Resistance	Capacitance	Frequency Range
1	10 ohms	1000 μμf	150 to 260 kc
2	10 ohms	285 μμf	260 to 1500 kc
3	5 ohms	285 μμf	1.5 to 10 mc
4	5 ohms	74 μμf	10 to 12.5 mc

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-274391		2A258
PROCUREM'T INFO.:	Army Spec. 71-834-1		
PROCUREM'T COG.:	Army	DESIGN COG.:	Army, SigC
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ANTENNA A-58
(DUMMY LOAD, ELECTRICAL, A-58)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 0.150 to 12.5 megacycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:
Hoffman Radio Company, Los Angeles, California; Army Order No. 4092-45CN dated 31 March 1945; Approximate Cost per Unit, $50.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-55-172 (Spare Parts List).

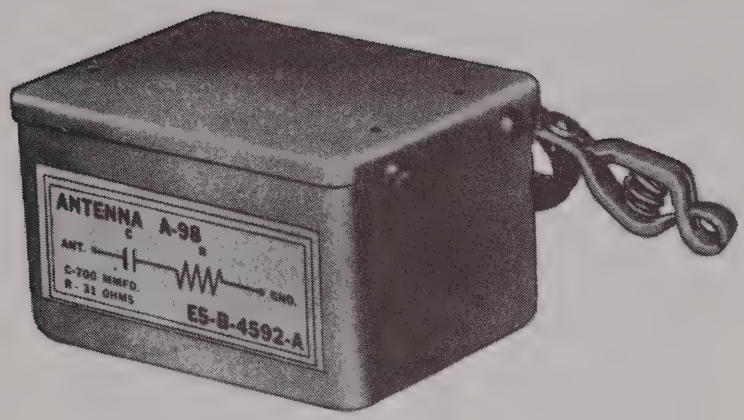
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Antenna A-58		7CAC-274391 2A258	7	6	8	6.50

ANTENNA A-98



UNCTIONAL DESCRIPTION:

A portable, general purpose, phantom antenna used in connection with tuning and sting low-frequency, low-powered transmitters. It is used in field and depot testg.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This unit consists of a resistor and capacitor connected in series which dissipate the radio frequency energy output of equipment being tested so it will not be radiated during the test.

ower Supply: None required.

requency Range: 500 kilocycles per second (fixed).

esistance: 31 ohms.

apacitance: 700 micromicrofarads.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274115		2A275-98
ROCUREM'T INFO.:	Army Dwg. Nos. (SigC) ESD-4591, ESD-4592, B-4593		
ROCUREM'T COG.:	USAF	DESIGN COG.: USAF, C&N	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ANTENNA A-98

ELECTROMECHANICAL DESCRIPTION:

Accuracy: Resistive: ±10%.
Capacitive: ±10%.

MANUFACTURERS' OR CONTRACTORS' DATA:

Silman Manufacturing Company, Pittsburgh, Pennsylvania; USAF Order No. 8135-WF-43.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

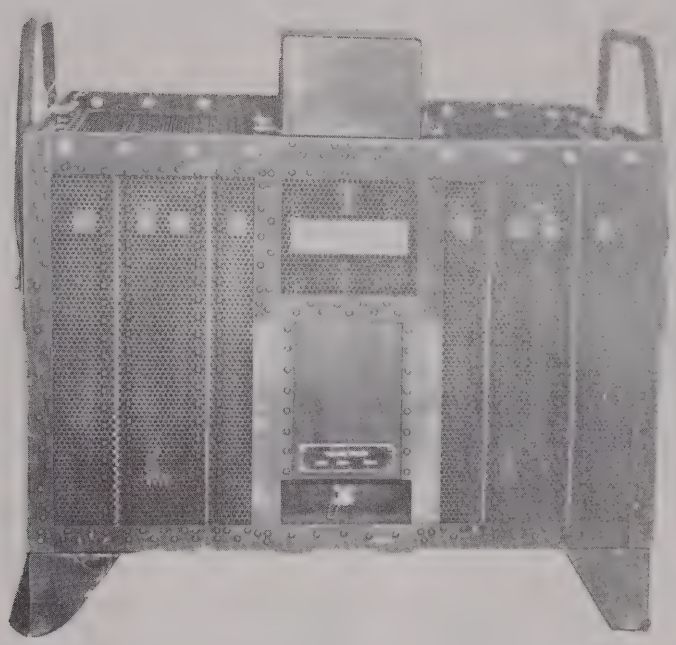
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Antenna A-98 (Shelf Package)	0.01	3	3	2	0.6

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Antenna A-98 Including:	Metal	7CAC-274115 2A275-98	2-9/16	2	1-9/16	0.3125
1	Lead (Terminated in Alligator Clips)			6 long			

ELECTRICAL DUMMY LOAD AN/UPM-50



UNCTIONAL DESCRIPTION:

A portable, general purpose instrument which acts as a voltage divider. It will lso dissipate all the energy transmitted by the radar set modulator under test so hat the modulator can be tested during operation without radiating radio frequency nergy.

ELATIONSHIP TO OTHER EQUIPMENT:

Overall nomenclature for DA-61/UPM-50.

LECTROMECHANICAL DESCRIPTION:

Power Supply: None required.

Frequency Range: No-operating; operates with square waves down to 2 microsecond pulses.

nput Power Rating: 8000 watts, average, maximum.

nput Voltage Rating: 12,000 volts, peak, maximum for 2 microsecond pulses.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			AN/UPM-50

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD AN/UPM-50

ELECTROMECHANICAL DESCRIPTION: (Continued)
Input Impedance: 12.5 ohms, resistive.
Element Resistance: 50 ohms ±10%.
Division Ratio: 240 volts to 1 volt.

MANUFACTURERS' OR CONTRACTORS' DATA:
Phebco, Inc., 3640 Woodland Avenue, Baltimore 10, Maryland; USAF Contract AF 33(604)-7879; Approximate Cost per Unit, $445.90.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical AN/UPM-50 Including:			23	25	20	75
1	Dummy Load, Electrical DA-61/UPM-50			23	24-1/2	19-1/2	
1	Cover, Electrical Load, Dummy CW-314/UPM-50						

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

ELECTRICAL DUMMY LOAD AN/URM-59

UNCTIONAL DESCRIPTION:

A portable general purpose RF dummy load which is used to terminate RF transmission lines of radio and radar sets during testing of system components. It is a igh power waveguide type liquid cooled equipment which prevents radiation of nergy during organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to WAC Part Number DS-59.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of Dummy Load DA-54/U, which is a section of waveguide with a tapered central absorbing structure through which flows a lossy dielectric fluid, Cooler HD-143/URM-59. It extracts the best from the lossy fluid. It also consists of a portable meter which indicates by calorimetric measurement the energy in watts absorbed by the load.

ower Supply: None required, except 115 volts, 60 cycles, for the cooler.

requency Range: 1120 to 1700 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Alternate Standard		
STOCK NOS.	7CAC-274352-8		
PROCUREM'T INFO.:	Exhibit RADC 2284		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, RADC
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 1
	- Electronics Test Equipment -		AN/URM-59

s project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD AN/URM-59

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Rating: 1000 watts, average.
10 megawatts, peak, for 0.1 microsecond pulses.

Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

Temperature Range: -54° C. (-65° F.) to +71° C. (+128° F.).

Humidity Range: Up to 100% at temperatures up to +66° C. (+119° F.).

Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, nonoperational.

MANUFACTURERS' OR CONTRACTORS' DATA:

WAC Engineering Company, 35 South St. Clair Street, Dayton2, Ohio; Contract No. AF 33(604)7917, dated February 1954; Approximate Cost per Unit, $1000.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

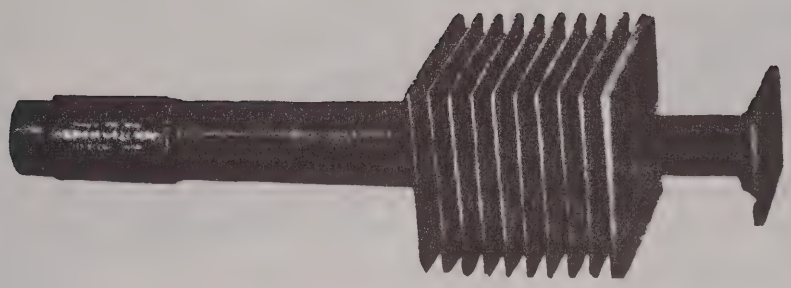
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load AN/URM-59	Brass		7	11	50	
	Including:						
1	Dummy Load DA-54/U						
1	Case CY-1311/ URM-59						
1	Power Indicating Meter						

EQUIPMENT SUPPLIED: (Continued)

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Liquid Cooler HD-143/ URM-59						
4	Wrench						
2	Container of Lossy Fluid						
1	Hardware Kit						
2	Hose, Heat Exchanger						
1	Instruction Chart						
1	Technical Order						

172

ELECTRICAL DUMMY LOAD AN/URM-62



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy oad which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain components of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dissipating material. Provision is made for attachment to a 1" x 1/2" waveguide.

ower Supply: None required.

requency Range: 8200 to 12,400 megacycles per second.

ower Rating: 175 watts, average.
500 kilowatts peak, for one-microsecond pulses.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-274298		
PROCUREM'T INFO.:	USAF Spec. No. 7537, dated 24 January 1949		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Rome
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1

Project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD AN/URM-62

ELECTROMECHANICAL DESCRIPTION: (Continued)

Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Antenna Research Laboratory, Inc., Columbus, Ohio; USAF Contract Nos. AF 33 (038)29188, 15 June 1951; AF 33(038)18864, 18 January 1951; AF 33(038)14185, 28 June 1950.

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $200.00.

Wac Engineering Company, 35 South St. Clair Street, Dayton, Ohio; Contract No. AF 33(604)9098, 8 April 1954; Approximate Cost per Unit, $66.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35DA22-1 (Operation and Service Instructions).

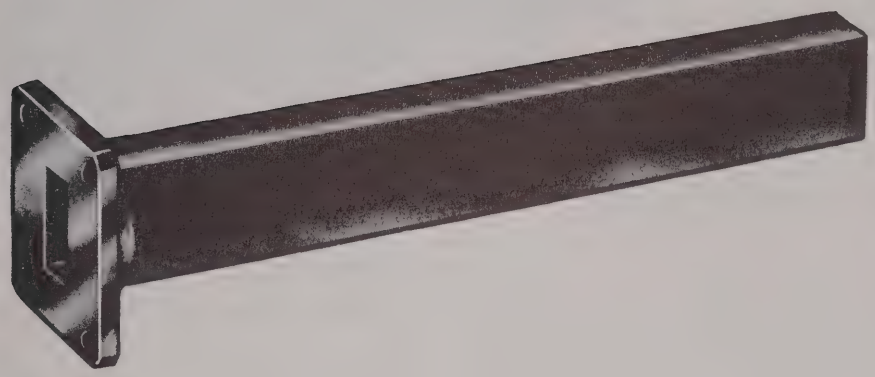
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load AN/URM-62 Including:		7CAC-274298				
1	Dummy Load DA-22/U	Silver plated brass	7CAC-274446 2Z3905-22	11	2-1/2	2-1/2	
1	Case CY-769/URM-62			11-5/8	4	3-1/4	
						Total:	7

ELECTRICAL DUMMY LOAD AN/URM-63



UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaon into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 1.0" x 0.5".

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-274265		
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			AN/URM-63

Project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

ELECTRICAL DUMMY LOAD AN/URM-63

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 8200 to 12,400 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.05 maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

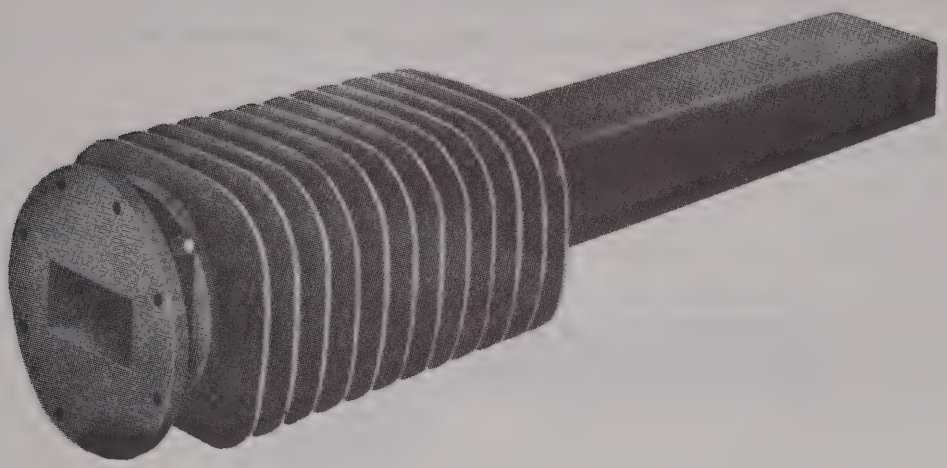
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load AN/URM-63 Including:	Chromium Plated Brass	7CAC-274265	6-1/2	1-5/8	1-5/8	0.75
1	Dummy Load DA-15/U		7CAC-274350-7				

ELECTRICAL DUMMY LOAD AN/URM-68



FUNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy load which is used to terminate radio frequency transmission lines of radio and radar sets to prevent radiation of energy and still permit testing of certain components of the system. It is used in organizational, field, and depot testing.

RELATIONSHIP TO OTHER EQUIPMENT:

AN/URM-68 is the overall nomenclature for DA-20/URM-68.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other, and a centrally supported section of power dissipating material inside. Provision is made for attachment to a 1-1/2" x 3/4" x 0.064" waveguide.

Power Supply: None required.

Frequency Range: 5850 to 8200 megacycles per second.

Impedance: 50 ohms.

Power Range: 420 watts, average; 500 kilowatts, peak, for one-microsecond pulses.

Voltage Standing Wave Ratio: 1.12 maximum, over the entire frequency range.

Temperature Range: -54°C. (-65°F.) to +71°C. (+160°F.).

Humidity Range: Up to 100% at temperatures up to +66°C.

Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, nonoperational.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Tentative Standard		
STOCK NOS.	7CAC-274377		
PROCUREM'T INFO.: Spec. MIL-D-4300, 14 March 1949 & Am. 2, 13 May 1953			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			AN/URM-68

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD AN/URM-68

MANUFACTURERS' OR CONTRACTORS' DATA:
Airtron, Incorporated, Linden, New Jersey; USAF Contract No. AF 33(038)25458, 11 May 1951.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-35DA20-1 (Operating Instructions).
TO 16-35DA20-2 (Service Instructions).
TO 16-35DA20-3 (Overhaul Instructions).
TO 16-35DA20-4 (Parts Breakdown).

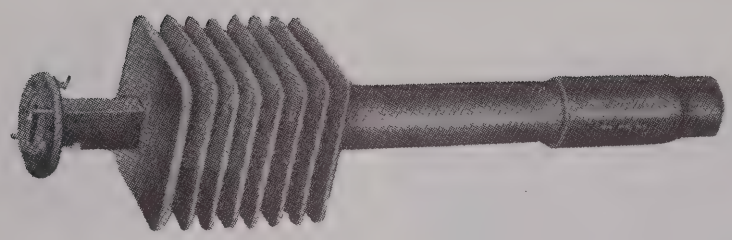
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load AN/URM-68		7CAC-274377				20 (complete)
	Including:						
1	Dummy Load DA-20/URM-68	Silver plated brass	7CAC-274372 2Z3905-20	14	3-1/2	4	
1	Case CY-767/U			17	6-5/8 dia.		

ELECTRICAL DUMMY LOAD AN/USM-40



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy oad which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain compoents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

The AN/USM-40 is the overall nomenclature for the Dummy Load DA-24/U.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dissipating material. Provision is made for attachment to a 1/2" x 1/4" waveguide.
Power Supply: None required.
Frequency Range: 18,000 to 26,500 megacycles per second.
Power Rating: 35 watts, average.
40 kilowatts, peak, for one-microsecond pulses.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Tentative Standard		
TOCK NOS.	7CAC-274272		
PROCUREM'T INFO.: USAF Spec. No. 7532			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			AN/USM-40

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD AN/USM-40

ELECTROMECHANICAL DESCRIPTION: (Continued)
Duty Cycle Ratio: 0.000350.
Temperature Range: -54°C. (-55°F.) to +71°C. (+160°F.).
Humidity Range: Up to 100% at temperatures up to +66°C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, nonoperational.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sperry Gyroscope Company, Great Neck, Long Island, New York.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

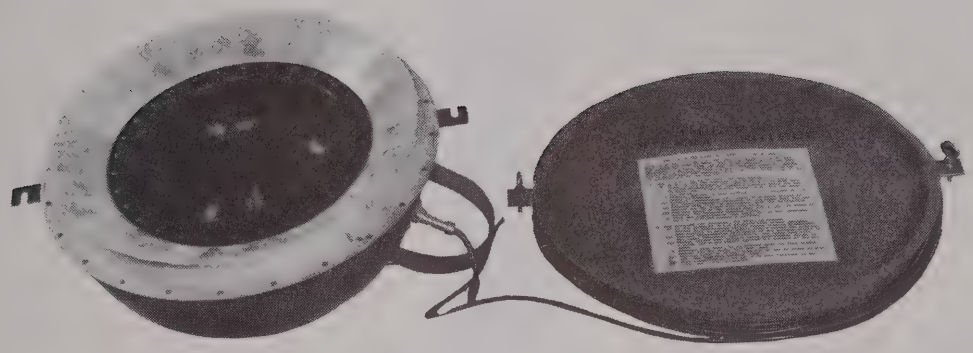
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load AN/USM-40	Silver plated brass	7CAC-274272				
	Including:						
1	Dummy Load DA-24/U		7CAC-274285	8-1/2	1-3/4	1-3/4	3
1	Case CY-771/U						

ANTENNA SHIELD CW-224/U



UNCTIONAL DESCRIPTION:

A portable, special purpose antenna shield for use with specialized test equipent in performing tests on aircraft installations utilizing antenna AT-234/APX. is designed to cover the antenna and absorb substantially all the radiated energy ncurrent with providing a means for testing the installation. It is used in organitional, field, and depot maintenance.

ELATIONSHIP TO OTHER EQUIPMENT:

This unit is used with Radar Test Set AN/UPM-8, Radar Test Sets AN/UPM-6 A d AN/UPM-6B, and Radar Test Sets AN/UPM-4A and AN/UPM-4B, in performing sts on aircraft IFF installations using Antenna AT-234/APX.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: The shield is shaped so that it encompasses most of the paths of electromagnetic radiation from the prime equipments antenna. The radiated energy is then dissipated by multiple reflection off the inside surface of the hat,

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.	7CAC-720706		
ROCUREM'T INFO.: Spec. MIL-A-6248, dated 8/31/50 & Am. 1 dated 11/2/50,			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, C&N	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			CW-224/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ANTENNA SHIELD CW-224/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

and is finally dissipated from the hat as heat into the atmosphere. The shield is equipped with a probe to provide a means of coupling the antenna shield to a test set as a method for sampling a portion of the radiated energy for test purposes.

Power Supply: None.

Frequency Range: 950 to 1250 megacycles per second.

Input Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Measurements Corporation, Boonton, New Jersey; USAF Production Contract No. AF 33(038)18907, 11 January 1951, Approximate Cost per Unit, $47.00; Contract No. AF 33(038)27939, 14 January 1952, Approximate Cost per Unit, $51.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Antenna Shield CW-224/U	Aluminum	7CAC-720706	8 (without handle)	16 dia.		7

DUMMY LOAD DA-2/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad, which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain compoents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 1.50" x 0.75".

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-2/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD DA-2/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 5850 to 8200 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

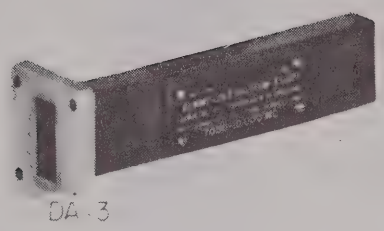
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-2/UP	Chromium plated brass		6-1/2	3-1/8	3-1/8	1.0

DUMMY LOAD DA-3/UP



FUNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy load which provides a power absorbing termination for transmission lines of radio and radar sets. It permits testing of transmitters while in operation without radiation into space.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 1.25" x 0.625".

Power Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-3/UP

Project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD DA-3/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 7050 to 10,000 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.05 maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

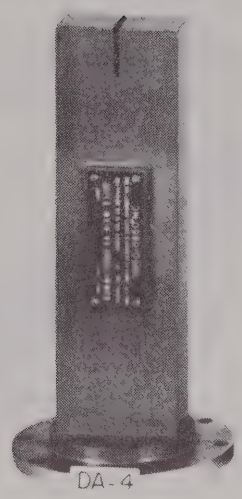
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-3/UP	Chromium plated brass		5-1/2	1-7/8	1-7/8	0.75

DUMMY LOAD DA-4/UP



UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaon into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 1" x 2".

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-4/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-4/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 3950 to 5850 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

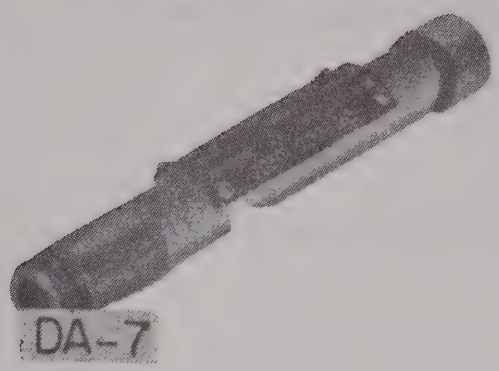
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-4/UP	Chromium plated brass		7-1/4	3-3/4	3-3/4	1.5

DUMMY LOAD DA-7/UP



FUNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy load which provides a power absorbing termination for transmission lines of radio and radar sets. It permits testing of transmitters while in operation without radiation into space.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a 3/8" section of rigid coaxial line with RF Jack UG-23B/U on one end, a shorting plate on the other, and a matched absorbing center conductor.

Power Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
T.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
- Electronics Test Equipment -			DA-7/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-7/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 7050 to 10,000 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

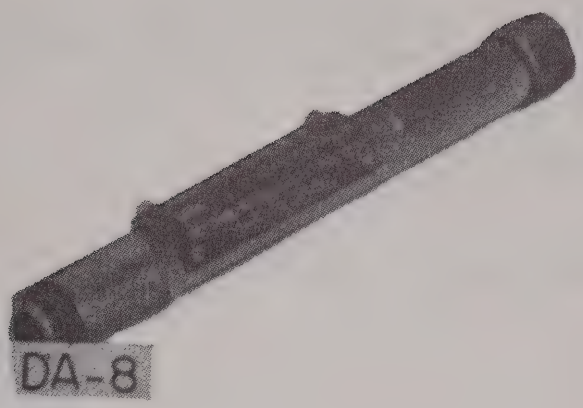
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-7/UP	Platinum coated glass		5-1/2	5/8	5/8	0.85

DUMMY LOAD DA-8/UP



'UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaion into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a 3/8" section of rigid coaxial line with RF Jack UG-23B/U on one end, a shorting plate on the other, and a matched absorbing center conductor.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
'YPE CLASS.			
TOCK NOS.			
'ROCUREM'T INFO.:			
'ROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Rome
.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
- Electronics Test Equipment -			DA-8/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-8/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 5850 to 8200 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

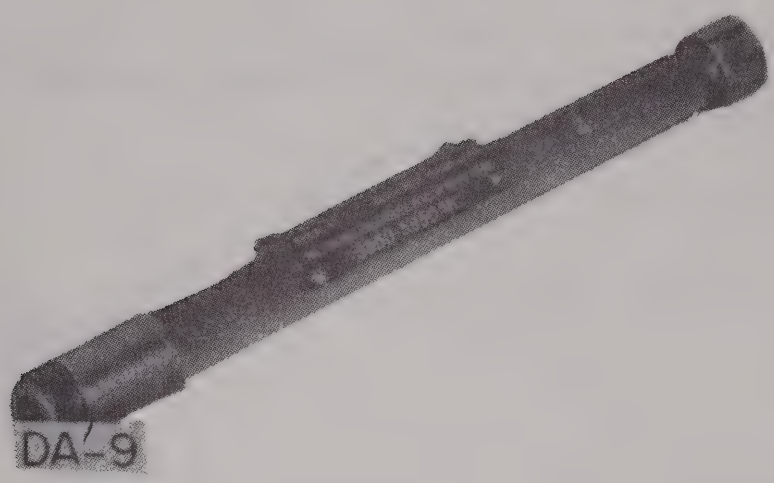
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-8/UP	Platinum coated glass		6-1/4	5/8	5/8	1.0

DUMMY LOAD DA-9/UP



UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy ad which provides a power absorbing termination for transmission lines of radio d radar sets. It permits testing of transmitters while in operation without radia-on into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a 3/8" section of rigid coaxial line with RF Jack UG-23B/U on one end, a shorting plate on the other, and a matched absorbing center conductor.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			

ROCUREM'T INFO.:

ROCUREM'T COG.: USAF DESIGN COG.: USAF, Rome

.I.I.N.: FUNCTIONAL CLASS. NO.: 12.3.1

- Electronics Test Equipment - DA-9/UP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-9/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 3950 to 5850 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-9/UP	Platinum coated glass		8-1/8	5/8	5/8	1.5

DUMMY LOAD DA-10/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaion into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a 5/8" section of rigid coaxial line with female coupling UG-141/U on one end, a shorting plate on the other, and a matched absorbing center conductor.

Power Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
T.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-10/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-10/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 4900 to 7050 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-10/UP	Platinum coated glass		7-1/4	3/4	3/4	2.0

DUMMY LOAD DA-11/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaion into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a 5/8" section of rigid coaxial line with female coupling UG-141/U on one end, a shorting plate on the other, and a matched absorbing center conductor.

ower Supply: None required.

requency Range: 3950 to 5850 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-11/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-11/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Range: 1 watt, average; 1 kilowatt, peak.
Duty Cycle Ratio: 0.001.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

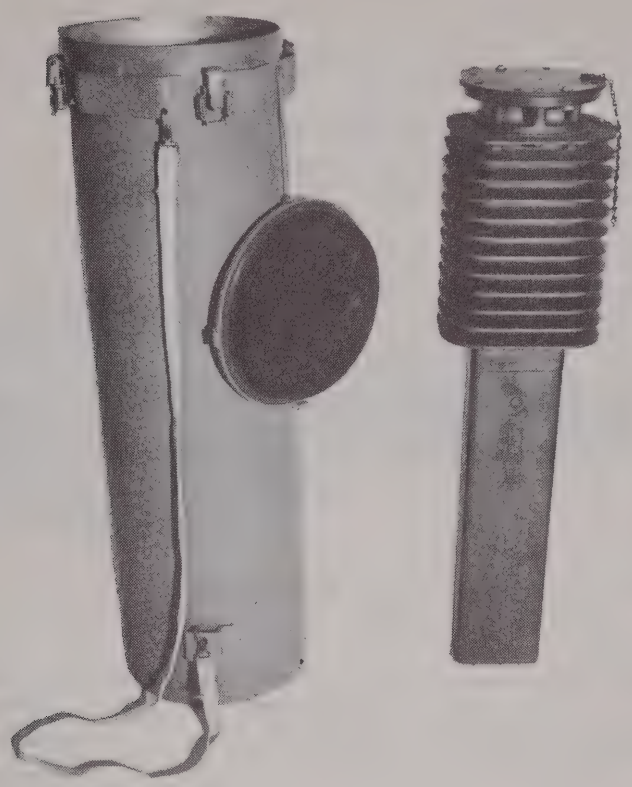
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-11/UP	Platinum coated glass		8-1/4	3/4	3/4	2.25

DUMMY LOAD DA-18/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and dar sets to prevent radiation of energy and still permit testing of certain compo-nts of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Sperry Model No. 239.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other, and a centrally supported section of power dissipating material inside. Provision is made for attachment to a 3" x 1-1/2" x 0.08" waveguide.

ower Supply: None required.

equency Range: 2600 to 3950 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274443		2Z3905-18
ROCUREM'T INFO.: MIL-D-4678(USAF) dated 30 April 1953			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-18/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-18/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Range: 600 watts, average; 800 kilowatts, peak, for one microsecond pulses.
Voltage Standing Wave Ratio: 1.10, maximum, over the entire frequency range.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea Level to 10,000 feet, operational.
Sea Level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Estimated Cost per Unit, $300.00; Sperry Dwg. No. 5224-90010.

Airtron, Incorporated, Linden, New Jersey; USAF Contract No. AF 33(038)14135; Approximate Cost per Unit, $100.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-30CPS6-7.

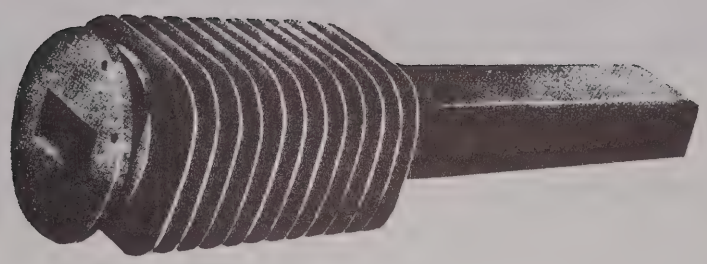
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-18/U Including:		7CAC-274443 2Z3905-18	26-3/8	5	6-1/2	20
1	Transit Case CY-765/U	Aluminum		31	9-1/2	9-1/2	15

DUMMY LOAD DA-19/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain compo-ents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Sperry Model 240.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other, and a centrally supported section of power dissipating material inside. Provision is made for attachment to a 2" x 1" x 0.064" waveguide.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274265		
ROCUREM'T INFO.:	USAF Spec. No. 7536		
ROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Rome
.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
	- Electronics Test Equipment -		DA-19/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD DA-19/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 3950 to 5850 megacycles per second.
Power Range: 600 watts, average; 800 kilowatt peak with one-microsecond pulses
Voltage Standing Wave Ratio: 1.15 maximum over the entire frequency range.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contrac No. W-28-099-ac-176; Approximate Cost per Unit, $300.00; Sperry Dwg. No. 5224-9001

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

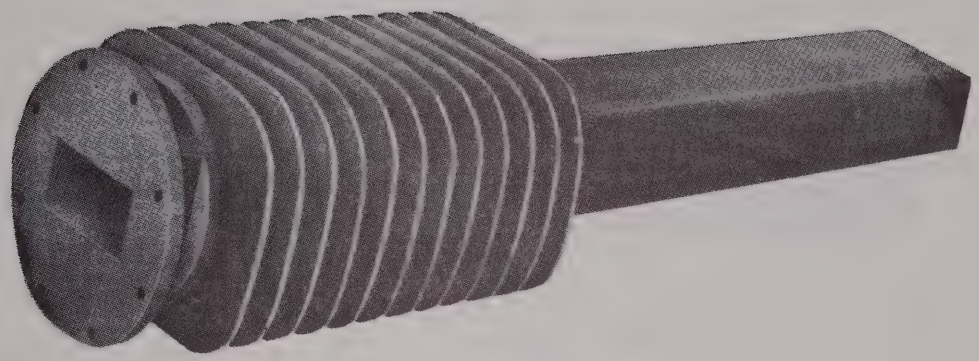
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-19/U Including:		7CAC-274265	19	4-1/2	5-1/2	23 (complete)
1	Case CY-766/U						

DUMMY LOAD DA-20/U



UNCTIONAL DESCRIPTION.

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain compo-ents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other, and a centrally supported section of power dissipating material inside. Provision is made for attachment to a 1-1/2" x 3/4" x 0.064" waveguide.

wer Supply: None required.

equency Range: 5850 to 8200 megacycles per second.

wer Range: 420 watts, average; 600 kilowatts, peak, for one-microsecond pulses.

ltage Standing Wave Ratio. 1.12, maximum, over the entire frequency range.

mperature Range. -54° C. to +71° C.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Substitute Standard		
OCK NOS.	7CAC-274372		2Z3905-20
ROCUREM'T INFO.: Spec. No. MIL-D-4300, 14 March 1949 & Am. 2, 13 May 1953, EX. WLENG-2089.			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
I.I.N.:		FUNCTIONAL CLASS, NO.: 12.3.1	
- Electronics Test Equipment -			DA-20/U

ject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD DA-20/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Humidity Range: Up to 100% at temperatures up to +66° C.

Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $200.00.

Airtron, Incorporated, Linden, New Jersey; USAF Contract No. AF-33(038)25458 11 May 1951.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35DA20-1 (Operating Instructions).
TO 16-35DA20-2 (Service Instructions).
TO 16-35DA20-3 (Overhaul Instructions).
TO 16-35DA20-4 (Parts Breakdown).

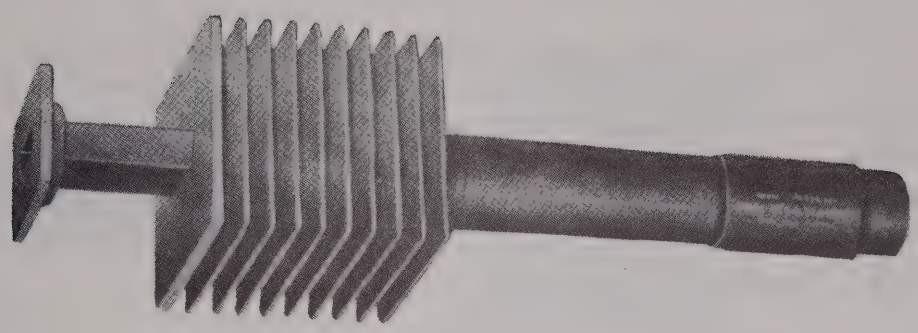
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-20/U Including:	Silver plated brass	7CAC-274372 2Z3905-20	14	3-1/2	4	20 (complete)
1	Case CY-767/U						

DUMMY LOAD DA-21/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad which is used to terminate radio frequency transmission lines of radio and dar sets to prevent radiation of energy and still permit testing of certain compo-nts of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dis-sipating material. Provision is made for attachment to a 1-1/4" x 5/8" wave-guide.

ower Supply: None required.

requency Range: 7050 to 10,000 megacycles per second.

ower Rating: 280 watts, average.
800 kilowatts, peak, for one-microsecond pulses.

emperature Range: -54° C. to +71° C.

midity Range: Up to 100% at temperatures up to +66° C.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274383		2Z3905-21
ROCUREM'T INFO.:	USAF Spec. No. 7522, dated 24 January 1949		
ROCUREM'T COG.:	USAF	DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
	- Electronics Test Equipment -		DA-21/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multi):thed in U. S. A.

DUMMY LOAD DA-21/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Antenna Research Laboratory, Incorporated, Columbus, Ohio; USAF Contrac Nos. AF 33(038)14185, 28 June 1950; AF 33(038)18864, 18 January 1951; AF 33(038 29188, 15 June 1951.

Electro Impulse Laboratory; USAF Contract No. AF 33(038)7823.

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $200.00.

Wac Engineering Company, 35 South St. Clair Street, Dayton, Ohio; Contrac No. AF 33(038)28806, 27 November 1951; Approximate Cost per Unit, $84.00; Contract No. AF 33(600)21336, 26 November 1952; Approximate Cost per Unit, $77.45

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35DA21-1 (Operation and Service Instructions).
TO 16-35DA21-12 (Service Instructions).
TO 16-35DA21-13 (Illustrated Parts Breakdown).

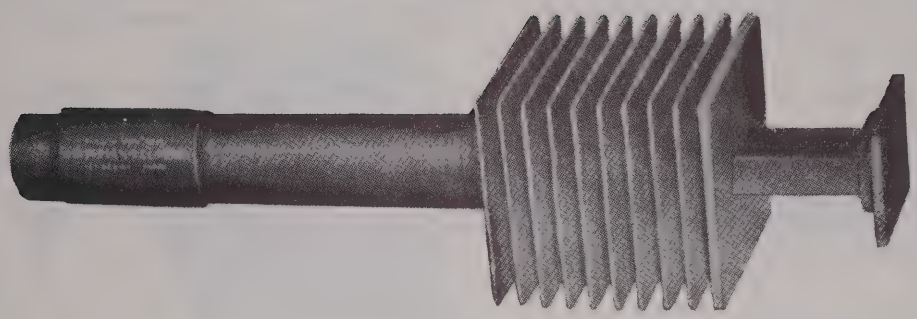
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-21/U	Silver plated brass	7CAC-274383 2Z3905-21	12	3-1/2	3-1/2	15 (Complete)
1	Case CY-768/U		7CAC-176572-84				

DUMMY LOAD DA-22/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad which is used to terminate radio frequency transmission lines of radio and ıdar sets to prevent radiation of energy and still permit testing of certain compo-ents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dis-sipating material. Provision is made for attachment to a 1" x 1/2" waveguide.

ɔwer Supply: None required.

requency Range: 8200 to 12,400 megacycles per second.

ɔwer Rating: 175 watts, average.
500 kilowatts peak, for one-microsecond pulses.

ɔltage Standing Wave Ratio: 1.15 maximum, over the entire frequency range.

emperature Range: -54° C. to 71°C.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274446		2Z3905-22
ROCUREM'T INFO.:	USAF Spec. No. 7537, dated 24 January 1949		
ROCUREM'T COG.:	USAF	DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
	- Electronics Test Equipment -		DA-22/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-22/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Antenna Research Laboratory, Incorporated, Columbus, Ohio; USAF Contract Nos. AF-33(038)29188, 15 June 1951; AF 33(038)18864, 18 January 1951; AF 33(038) 14185, 28 June 1950.

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $200.00.

Wac Engineering Company, 35 South St. Clair Street, Dayton, Ohio; Contract No. AF 33(604)9098, 8 April 1954.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35DA22-1 (Operation and Service Instructions).
TO 16-35DA22-12 (Service Instructions).
TO 16-35DA22-14 (Illustrated Parts Breakdown).

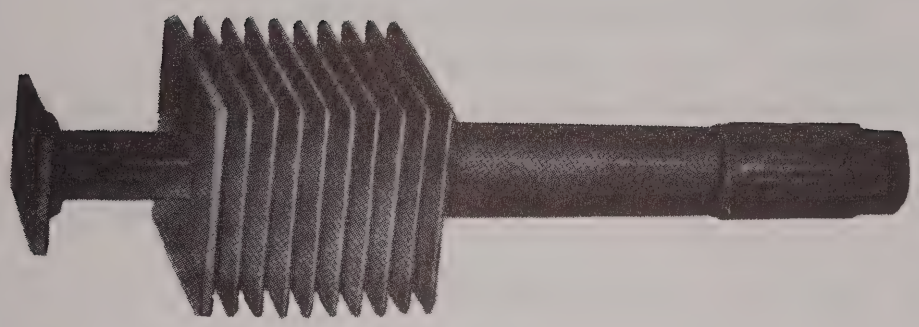
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-22/U Including:	Silver plated brass	7CAC-274446 2Z3905-22	11	2-1/2	2-1/2	7 (Complete)
1	Case CY-769/U						

DUMMY LOAD DA-23/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and ıdar sets to prevent radiation of energy and still permit testing of certain compo-ents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dis-sipating material. Provision is made for attachment to a 0.702" x 0.391" wave-guide.

ɔwer Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			
PROCUREM'T INFO.:	USAF Spec. No. 7531		
PROCUREM'T COG.:	USAF	DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
	- Electronics Test Equipment -		DA-23/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-23/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 12,400 to 18,000 megacycles per second.
Power Rating: 100 watts, average; 280 kilowatts, peak for one-microsecond pulses
Duty Cycle Ratio: 0.000357.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $100.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

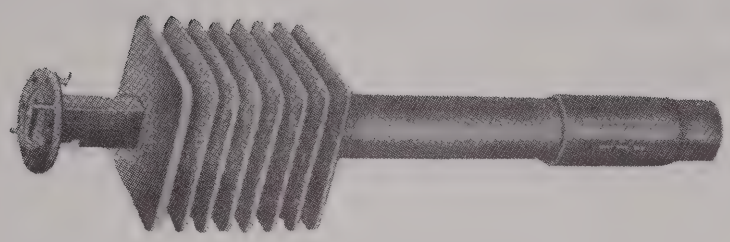
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-23/U Including:	Silver plated brass		9-1/2	2-1/4	2-1/2	4 (complete)
1	Case CY-770/U						

DUMMY LOAD DA-24/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and dar sets to prevent radiation of energy and still permit testing of certain compo-nts of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dis-sipating material. Provision is made for attachment to a 1/2" x 1/4" waveguide.
wer Supply: None required.
equency Range: 18,000 to 26,500 megacycles per second.
wer Rating: 35 watts, average.
100 kilowatts, peak, for one-microsecond pulses.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274285		
ROCUREM'T INFO.: USAF Spec. No. 7532			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-24/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-24/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Duty Cycle Ratio: 0.000350.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $100.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

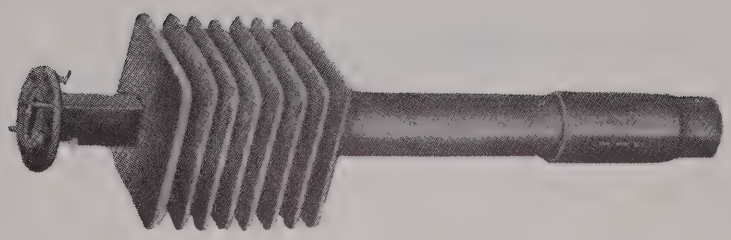
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-24/U Including:	Silver plated brass	7CAC-274285	8-1/2	1-3/4	1-3/4	3
1	Case CY-771/U						

DUMMY LOAD DA-25/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dummy ad, which is used to terminate radio frequency transmission lines of radio and dar sets to prevent radiation of energy and still permit testing of certain compo-nts of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide with a flange on one end and a shorting plate on the other. It contains a section of power dis-sipating material. Provision is made for attachment to a 0.360" x 0.220" wave-guide.

wer Supply: None required.

equency Range: 26,500 to 39,000 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.			

ROCUREM'T INFO.: USAF Spec. No. 7533

ROCUREM'T COG.: USAF DESIGN COG.: USAF, Rome

.I.I.N.: FUNCTIONAL CLASS. NO.: 12.3.1

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-25/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Rating: 18 watts, average; 50 kilowatts, peak, for one-microsecond pulses.
Duty Cycle Ratio: 0.000360.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176; Approximate Cost per Unit, $100.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-25/U	Silver plated brass		8	1-3/4	1-3/4	3

DUMMY LOAD DA-26/U

DA-26

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaon into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 0.50" x 0.25".

ower Supply: None required.

requency Range: 18,000 to 26,500 megacycles per second.

ower Rating: 1 watt, average; 1 kilowatt, peak.

oltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-26/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-26/U

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

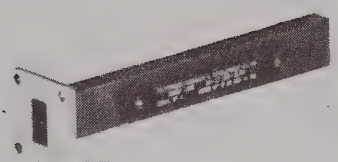
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weigh (Lbs.
				H	W	D	
1	Dummy Load DA-26/U	Brass		5	1-1/4	1-1/4	0.4

DUMMY LOAD DA-27/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaon into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 0.702" x 0.391".

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-27/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-27/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 12,400 to 18,000 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Voltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weigh (Lbs.
				H	W	D	
1	Dummy Load DA-27/U	Nick-el plated brass		5-1/2	1-5/16	1-5/16	0.5

DUMMY LOAD DA-28/U

DA-28

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy ad which provides a power absorbing termination for transmission lines of radio d radar sets. It permits testing of transmitters while in operation without radia- on into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally sup- ported tapered strip of lossy material inside. The transmission line has outside dimensions of 0.360" x 0.220".

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-28/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-28/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range, 26,500 to 39,000 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Voltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

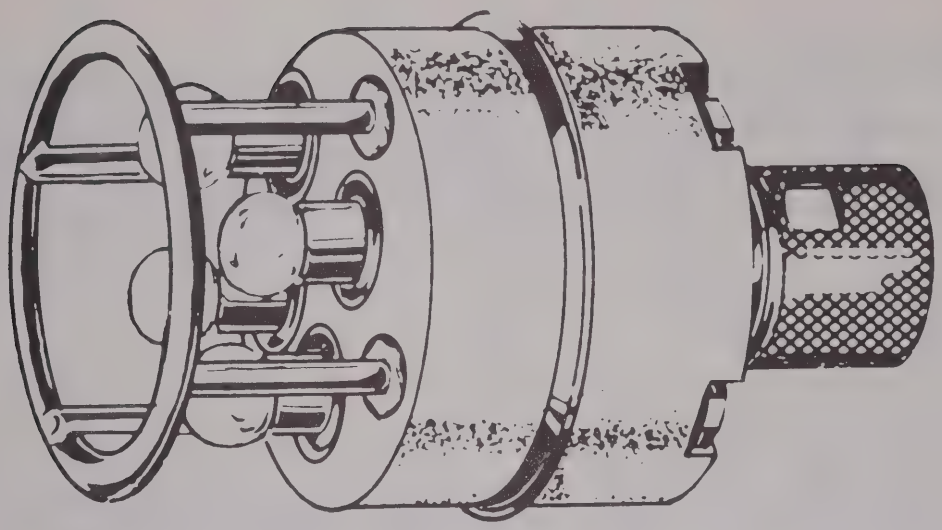
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weigh (Lbs.
				H	W	D	
1	Dummy Load DA-28/U	Brass		5	1-1/4	1-1/4	0.4

DUMMY LOAD DA-29/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose, dummy load designed for use in testing the power output of radio transmitters.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The dummy load consists of a laminated phenolic knob containing four pilot lamps and one RF Plug UG-21/U.
Power Dissipation: 10 watts (approximately).
Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Espey Manufacturing Company, Inc., 528 East 78th Street, New York 21, New York; Order No. 25456-Phila-49-7; Espey Part No. 5.030.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			Standard
PROCUREM'T INFO.: USA Spec. 71-3244			
PROCUREM'T COG.: USA		DESIGN COG.: USA, SCEL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-29/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-29/U

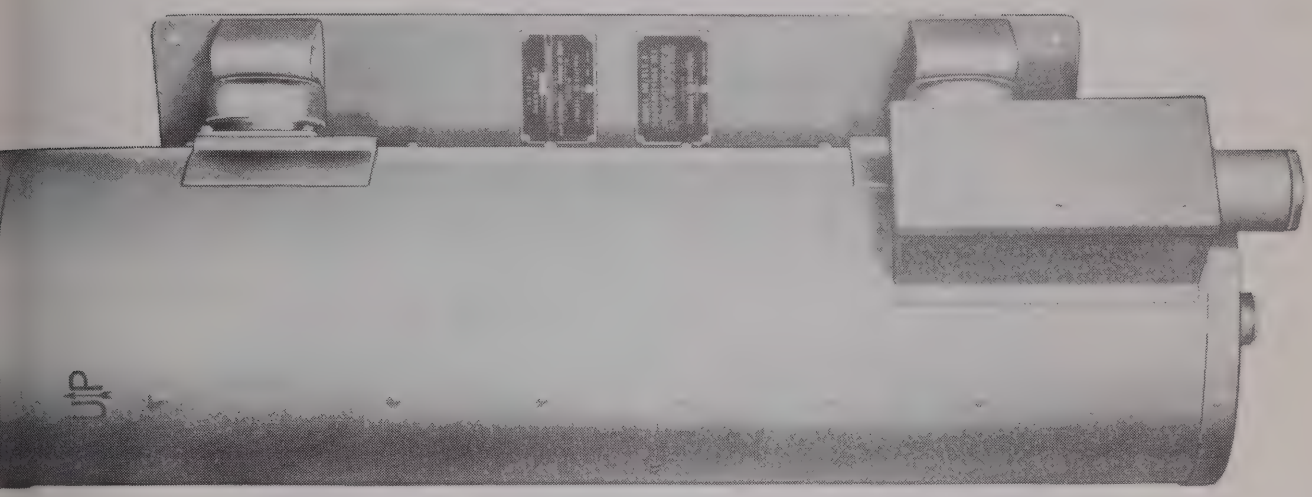
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-29/U			3-1/2 long 2 O.D.			

DUMMY LOAD DA-32/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, waveguide type, radio frequency dummy load, which s used to terminate and load high power, low frequency, RF heads when not con- ected to their antennas. This prevents radiation of RF energy and still permits esting of components of radio and radar sets while they are operating. It is intended or use at all maintenance echelons.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: An aluminum section of waveguide contains a section of power dissipating material. One end is shorted, while the other is flanged for mounting to the RF head through eight tapped holes.

ower Supply: 115 volts, AC, 60 cycles per second, single phase, to heat dissipating blower motor.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.: Navy Spec. CS-704 (BuShips)			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-32/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-32/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 90 to 1000 megacycles per second.
Power Dissipation Rating: 1500 watts, average.
Input Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:
General Electric Company, Schenectady, New York; Navy Contract No. NObsr 39342.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

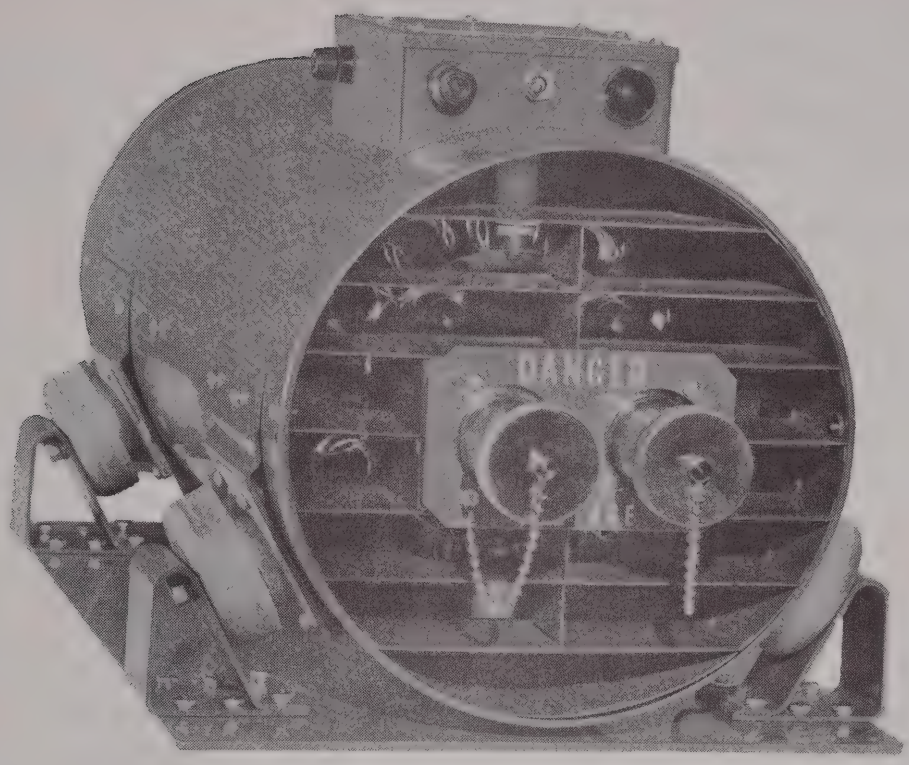
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-32/U	Aluminum		5-3/8	24-1/8	6-7/8	50

DUMMY LOAD DA-37/U



UNCTIONAL DESCRIPTION:

A general purpose, high power dissipating dummy load designed to absorb the full ower output of radar modulators. It provides a matched simulated load for a modu-ator, so that operational tests can be performed without radiation of a signal. The ront panel contains two high voltage jacks, two indicator lights, two fuse holders, nd a toggle switch. This equipment is used in field and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ower Supply: None required.

requency Range: Upper frequency limit is approximately 4000 kilocycles per sec-ond.

ower Dissipation Rating: 6000 watts, average.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-37/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-37/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Peak Voltage Rating: 12 kilovolts.
Input Impedance: 25 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:
Bird Electronics Corporation, Cleveland, Ohio; Navy Contract No. NObsr-39406

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-37/U	Aluminum		13-1/4	11-3/4	26	

DUMMY LOAD DA-45/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, coaxial type, radio frequency dummy oad which provides a power absorbing termination for transmission lines of radio nd radar sets. It permits testing of transmitters while in operation without radiaon into space.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a 3/8" section of rigid coaxial line with a type N jack on one end, a shorting plate on the other, and a matched absorbing center conductor.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-45/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD DA-45/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 20 to 440 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Voltage Standing Wave Ratio: 1.15, maximum, over the entire frequency range.

MANUFACTURERS' OR CONTRACTORS' DATA:
Polytechnic Research and Development Company, Brooklyn, New York; USA
Contract No. W28-099-ac-148.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

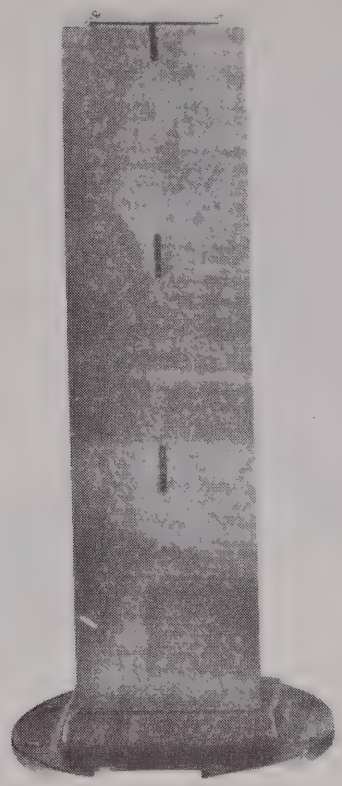
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-45/UP	Brass		2-5/8	5/8	5/8	0.4

ELECTRICAL DUMMY LOAD DA-51/U



'UNCTIONAL DESCRIPTION:

A portable, general purpose, low power, waveguide type, radio frequency dummy oad which is used to terminate radio frequency transmission lines of radio and adar sets to prevent radiation of energy and still permit testing of certain compoents of the system. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end, a shorting plate on the other, and a centrally supported tapered strip of lossy material inside. The transmission line has outside dimensions of 3.00" x 1.50".

'ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-51/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD DA-51/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 2600 to 3950 megacycles per second.
Power Rating: 1 watt, average; 1 kilowatt, peak.
Voltage Standing Wave Ratio: 1.05, maximum, over the entire frequency range.
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea Level to 10,000 feet, operational.
Sea Level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Polytechnic Research and Development Company, Brooklyn, New York; USAF Contract No. W28-099-ac-148.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

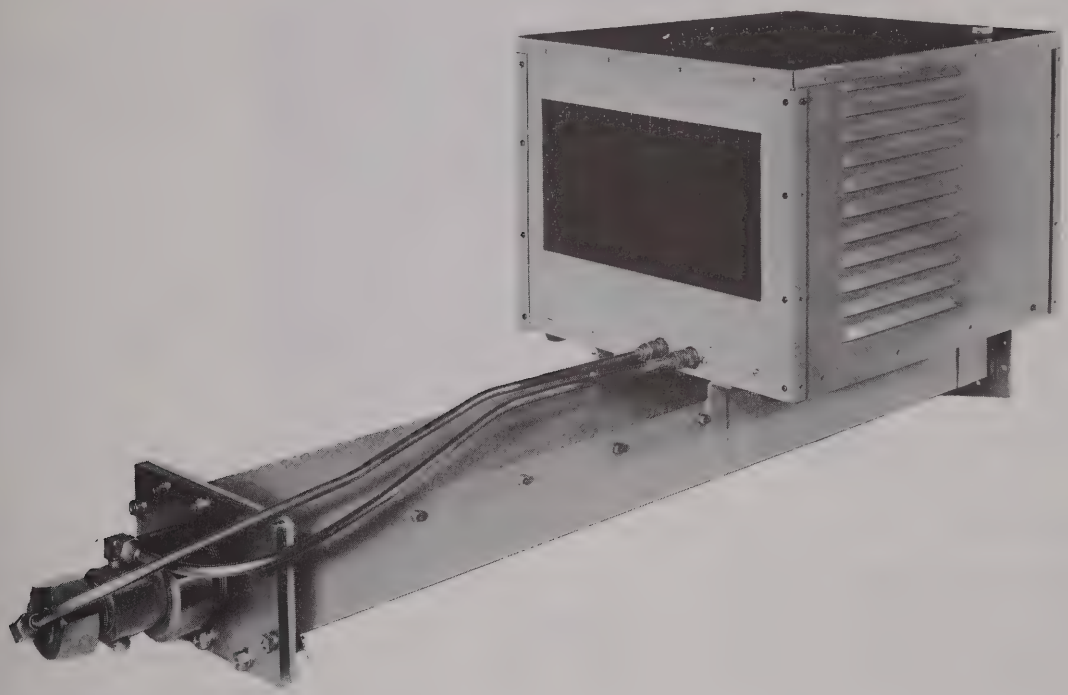
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load DA-51/U	Silver plated brass		12	5-1/4	5-1/4	4

ELECTRICAL DUMMY LOAD DA-53/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, liquid cooled radio equency dummy load which is used to terminate radio frequency transmission nes of radio and radar sets to prevent radiation of energy and still permit testing certain components of the system. It is used in organizational, field, and depot sting.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment consists of a section of waveguide transmission line with a flange on one end and a shorting plate on the other. It contains a section of power dissipating material. The transmission line has outside dimensions of 6.66" x 3.41".

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.			
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-53/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD DA-53/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None required.
Frequency Range: 1150 to 1750 megacycles per second.
Power Rating: 3000 watts, average.
10 megawatts, peak for 0.1 microsecond pulses.
Voltage Standing Wave Ratio: 1.10 maximum, over the entire frequency range
Temperature Range: -54° C. to +71° C.
Humidity Range: Up to 100% at temperatures up to +66° C.
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York; USAF Contract No. W-28-099-ac-176.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

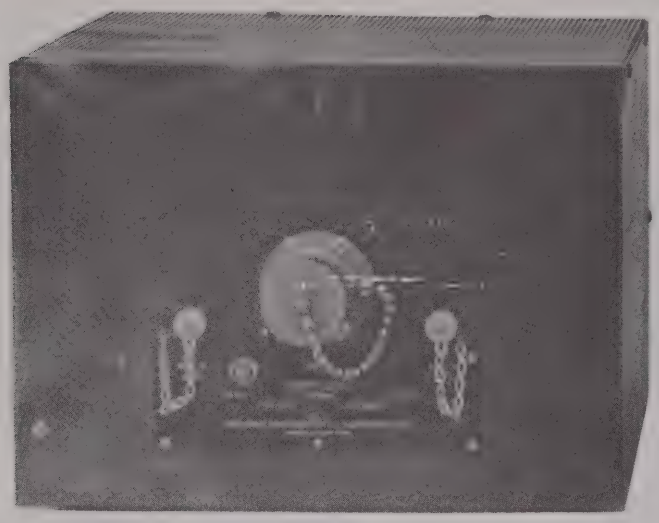
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load DA-53/U	Brass					

DUMMY LOAD, ELECTRICAL, DA-56/U



FUNCTIONAL DESCRIPTION:

A portable, special purpose, electrical dummy load which provides power dissipation terminals with outputs at 0.02 (high) and 0.0001 (low) of input power. This dummy load is equipped with four rubber feet for bench mounting. One RF Receptacle UG-37/U provides an input terminal and the output terminal consists of two Signal Corps Sockets, SO-239. This equipment is used with Moving Target Indicator Group AN/GPA-7, 7A to test Radar Sets AN/CPS-5C and AN/CPS-5D.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Frequency Range: 1150 to 1400 megacycles per second.
Peak Voltage Rating: 10 kilovolts.
Power Dissipation Rating: 1.2 kilowatts, average.
Input Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Airborne Instruments Laboratory, Incorporated, 160 Old Country Road, Mineola, Long Island, New York; Dwg. 437-3F6; Contracts W 33-038 ac-21293, AF 33(038)-11066, AF 33(038)-3609, and AF 33(038)-28304.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-274381	16H-30826-1075	Sig C 2Z3904-25
PROCUREM'T INFO.:			
PROCUREM'T COG.: USN		DESIGN COG.: USN, USMC	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-56/U

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD, ELECTRICAL, DA-56/U

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Field Test Equipment for Moving Target Indicator Group AN/GPA-7A; Airborne Instruments Laboratory, Incorporated, Handbook No. 671-H-1 (July 1950).

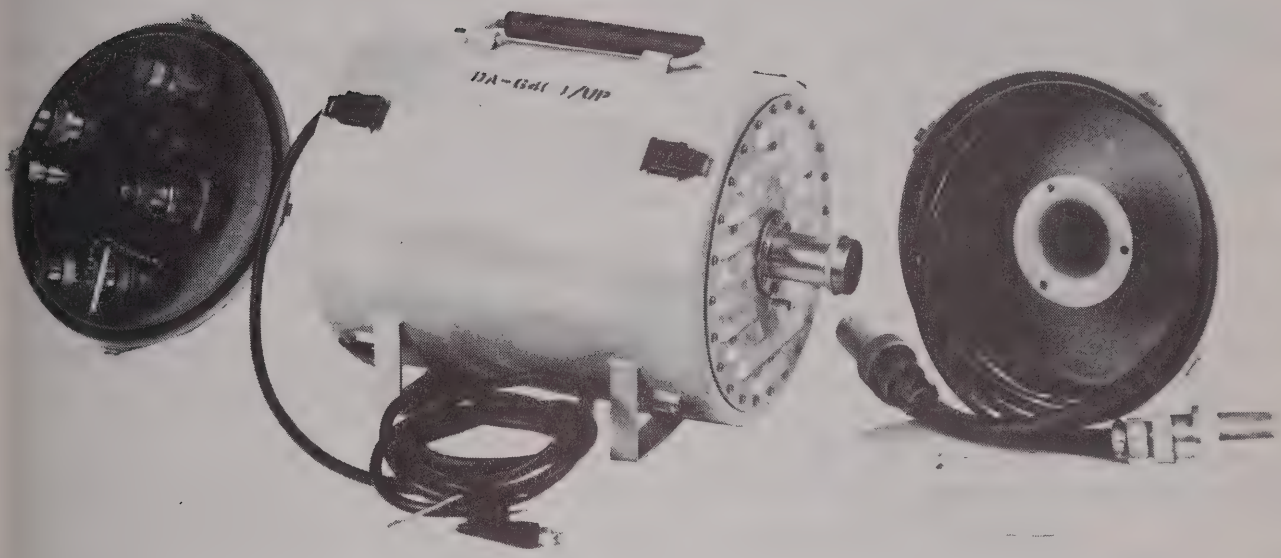
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load, Electrical DA-56/U	4.1	22	23-1/4	17-1/2	85

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical DA-56/U	Steel	7CAC-274381 16H-30826-1075 SigC 2Z3904-25	14-5/8	12-15/16	10-7/8	55

ELECTRICAL DUMMY LOAD DA-64(XE)/UP



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power dissipating, dummy load used in test-ıg most radar modulators in field and depot. A tap-off is provided for connecting small portion of the modulating signal to an oscilloscope for visual examination. he principal function of this equipment is to dissipate all the energy transmitted by .e modulator under test so that it can be tested during operation without radiating ıdio frequency energy.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Raytheon No. 1773B.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The circuit consists of a non-inductive resistor provided with a voltage dividing tap. It is terminated in coaxial connectors at each end with a length of coaxial cable provided. In addition to the viewing output connector, a

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.	7CAC-274352-7		
ROCUREM'T INFO.: Spec. MIL-D-11933(SigC) dated 23 April 1952			
ROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			DA-64(XE)/UP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD DA-64(XE)/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)

fused duplex convenience receptacle is connected to the load to allow connectio of auxiliary test equipment. A cooling fan and vents in the case of the equipmen provide forced convection cooling, since the RF energy is converted into hea which must be dissipated.

Power Supply: 115 volts ±10%, AC, single phase, 50 to 1000 cycles per second fo blower motor only.

Frequency Range: Up to 3 megacycles per second.

Power Dissipation Rating: 1200 watts, average, nominal.
1400 watts, average, maximum.

Peak Voltage Rating: 10,000 volts, maximum.

Pulse Lengths: 0.5 to 5.0 microseconds.

Input Impedance: 50.5 ohms, ±5% resistive.

Maximum Reactance: 2 ohms, at any frequency up to 3 megacycles per second.

Maximum Phase Shift: 2 electrical degrees at 3 megacycles per second.

Voltage Dividing Ratio: 100:1 (for video connection).

Convenience Receptacle Fuse Rating: 10 amperes.

Altitude Range: Operational up to 10,000 feet.
Non-operational up to 50,000 feet.

Ambient Temperature: -65° F. to +150° F.

MANUFACTURERS' OR CONTRACTORS' DATA:

Raytheon Manufacturing Company, Waltham, Massachusetts; Army Order No 14175-PH-5.-93; Army Contract No. DA36-039-sc-5622.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

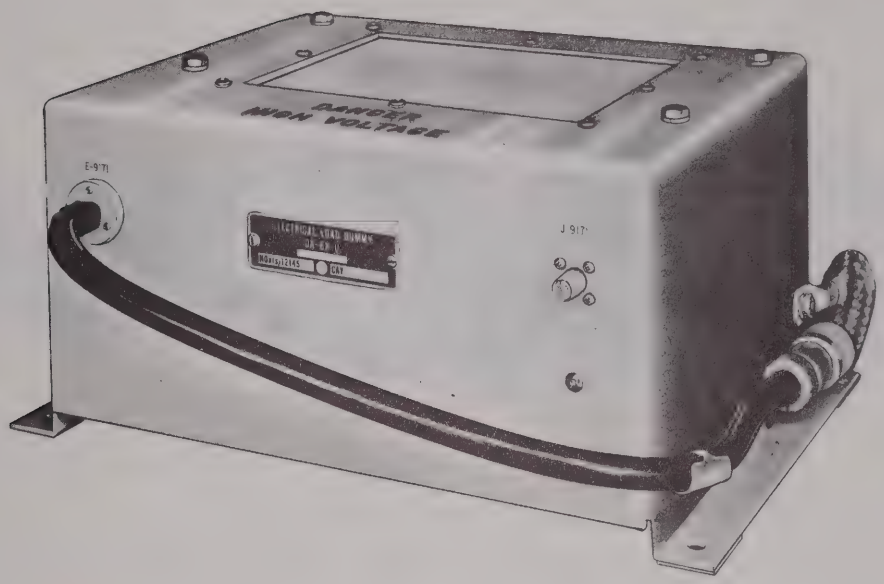
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	

ELECTRICAL DUMMY LOAD DA-64(XE)/UP

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load DA-64(XE)/UP Including:		7CAC-274352-7	14-1/4	22-3/4	12-1/4	33
1	Adapter UG-222/U		8850-108868				
1	Cord CG-317/U			120 long			
1	Pulse Cable RG-28/U (Plugs UG-174/U and UG-180A/U)			5 long			
1	Pulse Cable RG-28/U (Plugs UG-174/U and UG-34/U)			5 long			
1	Pulse Cable RG-28/U (Plugs UG-174/U and 2 flexible insulated leads, with Mueller Co. #24 Clips and #26 Red and Black Insulators.)			11 long			

ELECTRICAL LOAD DUMMY DA-68/U



UNCTIONAL DESCRIPTION:

A portable, general purpose equipment used as a resistive termination for the ılse transformer during tests on radar modulators. The dummy load presents ıe matching impedance to the pulse transformer so that the output pulse from the ılse transformer may be observed under simulated normal operating conditions. BNC jack located on the equipment permits an external oscilloscope to be con-ected for pulse observation.

ELATIONSHIP TO OTHER EQUIPMENT:

An Oscilloscope Tektronix 514D or DuMont 256 is required but not supplied.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The unit consists essentially of five parallel resistors, a two section voltage divider and a high voltage input cable. The five parallel resistors present a matching impedance to the pulse transformer and dissipate

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.		(ASO)R16AN-DA68U	
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy, ASO		DESIGN COG.: Navy, BuAer	
F.I.I.N.: 5985-295-7414		FUNCTIONAL CLASS. NO. 12.3.1	

ELECTRICAL LOAD DUMMY DA-68/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

the heat generated by the pulse input. The two section voltage divider attenuates the input pulses.

Power Supply: None.
Peak Input Power: 500 kilowatts.
Average Input Power: 500 watts.
Peak Input Voltage: 5 kilovolts.
Input Impedance: 50 ohms.
Input Attenuation Factor: 52.

MANUFACTURERS' OR CONTRACTORS' DATA:

Westinghouse Electric Corporation, Baltimore, Maryland; Contract No. N383(s)-1800A; Approximate Cost per Unit, $137.00.

TUBE COMPLEMENT:

None

REFERENCE DATA AND LITERATURE:

NavAer 16-30/APM-65-501, Handbook of Operation and Maintenance Instructions, Electrical Test Bench Set AN/APM-65A.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Load Dummy DA-68/U	metal	(ASO)R16AN-DA68U	12	14	12-1/4	10.5

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Electrical Load Dummy DA-68/U					

ELECTRICAL DUMMY LOAD DA-96/U

FUNCTIONAL DESCRIPTION:

A portable general purpose, high power, waveguide type radio frequency dummy load which is used to terminate radio frequency transmission lines of radio and radar sets to prevent radiation of energy and still permit testing of certain components of the system. It is used in organizational, field, and depot testing.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Airtron Model DL-148.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other, and a centrally supported section of power dissipating material inside.

Power Supply: None required.

Frequency Range: 2700 to 2900 megacycles per second.

Power Range: 2000 watts, average; 2.2 megawatts, peak, for one-microsecond pulse.

Voltage Standing Wave Ratio: 1.10, maximum, over the entire frequency range.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.: Spec. No. R-1018A			
PROCUREM'T COG.: USN		DESIGN COG.: USN, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			DA-96/U

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ELECTRICAL DUMMY LOAD DA-96/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Temperature Range: -54°C. (-65°F.) to +71°C. (+160°F.).
Humidity Range: Up to 100% at temperatures up to +66°C. (+151°F.).
Altitude Range: Sea level to 10,000 feet, operational.
Sea level to 50,000 feet, nonoperational.

MANUFACTURERS' OR CONTRACTORS' DATA:
Airtron, Inc., 20 East Elizabeth Avenue, Linden, New Jersey; Part No. 52280.
Bendix Aviation Company, Baltimore 4, Maryland; Dwg. No. N-220869-1.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

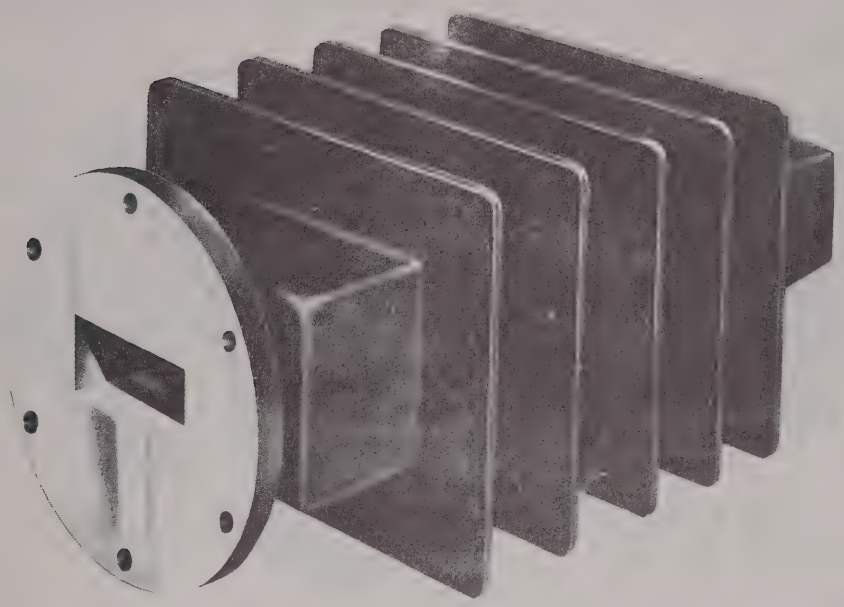
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Dummy Load DA-96/U			33	5	6	32.5

DUMMY LOAD, ELECTRICAL DA-144/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, radio frequency dum-ny load, used to terminate radio frequency transmission lines of radio and radar ets to prevent radiation of energy and still permit testing of certain components f the system. It is used in organizational, field and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Bogart Model C4063 and a replacement for Dummy Loads AN/URM-8, DA-2/UP, DA-20/UP and DA-94/FRC-33A.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other end and a section of power dis-sipating material. It is terminated with UG-441/U for use with Waveguide RG-106/U; however, all known flanges may be adapted to the mounting configuration

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			J005-8212207
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:	Army	DESIGN COG.:	Army, Ord
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
	- Electronics Test Equipment -		DA-144/U

DUMMY LOAD, ELECTRICAL DA-144/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

without changing the electrical characteristics. Fins may be added for greater heat dissipation. It may be used with pressurized or nonpressurized systems.

Power Supply: None.

Frequency Range: 5.85 to 8.20 kilomegacycles per second.

Power Range: 500 watts average, minimum without fins; 700 watts average, minimum with fins; 710 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Temperature: 300°C with fins, 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Nomenclature Card.

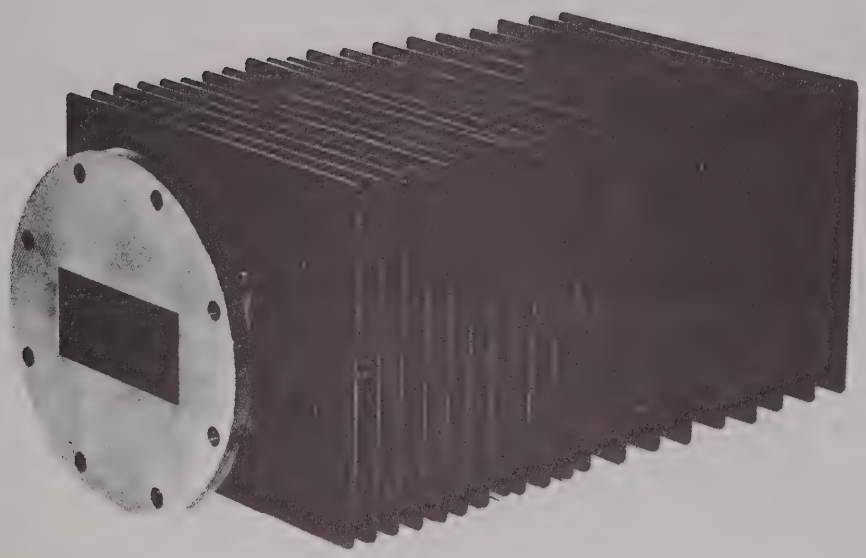
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load DA-144/U			8	3-1/8	3-7/8	2-3/4

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-144/U					

DUMMY LOAD, ELECTRICAL DA-145/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type radio frequency dum-y load used to terminate radar transmission lines. The dummy load prevents adiation of energy by absorbing and then dissipating the applied power. The unit ay be used with pressurized or nonpressurized systems.

ELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Dummy Load CG-97/AP, DA-18/U, DA-51/U, DA-96/FPN-28, A-112/U, DA-120/UP, TS-335/MPM, TS-338/UP, NT-66AJW, NT-66AKF and T-66ALL. Similar to Bogart Model S4063.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other end, and a section of power dissipating material. The waveguide is terminated with Flange UG-584/U for use with Waveguide RG-75/U; however, all known flanges may be adapted to the mounting

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
TOCK NOS.			

PROCUREM'T INFO.: MIL-D-(ORD), Dwg C8212204

PROCUREM'T COG.: Army DESIGN COG.: Army, Ord

.L.I.N.: FUNCTIONAL CLASS. NO.: 12.3.1

DUMMY LOAD, ELECTRICAL DA-145/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
configuration without changing the electrical characteristics. Fins may be added to the waveguide for greater heat dissipation.

Power Supply: None.

Frequency Range: 2.60 to 3.95 kilomegacycles per second.

Power Range: 1700 watts average, minimum without fins; 2250 watts average, minimum with fins; 3200 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Operating Temperature: 300°C with fins, 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:
Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York; Contract No. DA-30-069-ORD-1997; Approximate Cost per Unit, $152.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:
Manufacturer's Drawing B10392.

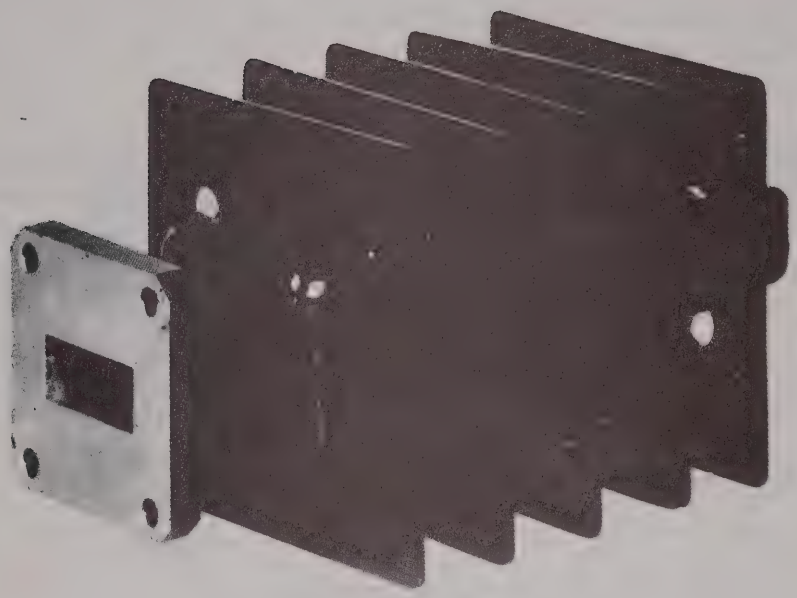
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical DA-145/U	aluminum		6-3/8	4-7/8	14	9-1/2

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-145/U					

DUMMY LOAD, ELECTRICAL DA-146/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type radio frequency dummy load used to terminate radio frequency transmission lines of radars. The ummy load prevents radiation of energy by absorbing and then dissipating the pplied power. The unit may be used with pressurized or nonpressurized systems.

ELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Dummy Load AN/URM-62, AN/URM-63, CG-88/U, DA-6/U, A-15/UP, DA-22/U, DA-97/FPN-28, DA-103/U, DA-115/U, TS-108A/AP and S-332/UP. Similar to Bogart Model X4063.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other end, and a section of high loss material on the inside to absorb radio frequency energy. The waveguide is

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.: MIL-D-(ORD), Dwg C824917			
PROCUREM'T COG.: Army		DESIGN COG.: Army, Ord	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12, 3, 1	
- Electronics Test Equipment -			DA-146/U

DUMMY LOAD, ELECTRICAL DA-146/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

terminated with Flange UG-135/U for use with Waveguide RG-67/U; however, all known flanges may be adapted to the mounting configuration without changing the electrical characteristics. Fins may be added to the waveguide for greater heat dissipation.

Power Supply: None.

Frequency Range: 8.2 to 12.4 kilomegacycles per second.

Power Range: 250 watts average, minimum without fins; 375 watts average, minimum with fins; 290 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Operating Temperature: 300°C with fins; 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York; Contract No. DA-30-069-ORD-1977; Approximate Cost per Unit, $118.75.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-11838.

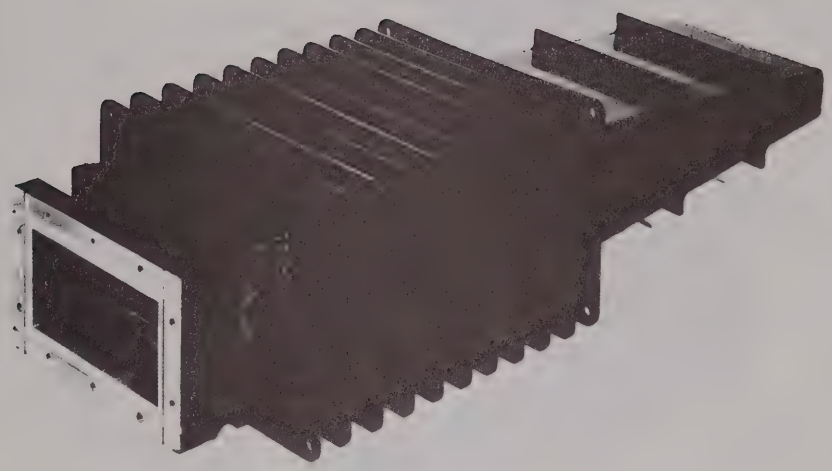
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical DA-146/U	alum-inum		2-3/4	2-3/4	5-3/4	1

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-146/U					

DUMMY LOAD, ELECTRICAL DA-147/U



UNCTIONAL DESCRIPTION:

A general purpose, high power waveguide type radio frequency dummy load sed to terminate radio frequency transmission lines of radars. The dummy load revents radiation of energy by absorbing and then dissipating the applied power. he unit may be used with pressurized or nonpressurized systems.

ELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Dummy Load AN/URM-59, DA-53/U, DA-54/U, DA-76/U and A-86/U. Similar to Bogart Model L 4063.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment consists of a waveguide with a flange on one end, a shorting plate on the other end, and a section of high loss material on the inside to absorb radio frequency energy. The waveguide is terminated with Flange UG-418/U for use with Waveguide RG-103/U; however, all known flanges may be adapted to the mounting configuration without changing the electrical

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.: MIL-D-(ORD), Dwg C8212205			
PROCUREM'T COG.: Army		DESIGN COG.:	Army, Ord
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1

DUMMY LOAD, ELECTRICAL DA-147/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

characteristics. Fins may be added to the waveguide for greater heat dissipation.

Power Supply: None.

Frequency Range: 1.12 to 1.70 kilomegacycles per second.

Power Range: 2000 watts average, minimum without fins; 4000 watts average, minimum with fins; 17,200 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Operating Temperature: 300°C with fins, 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Company, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-10394.

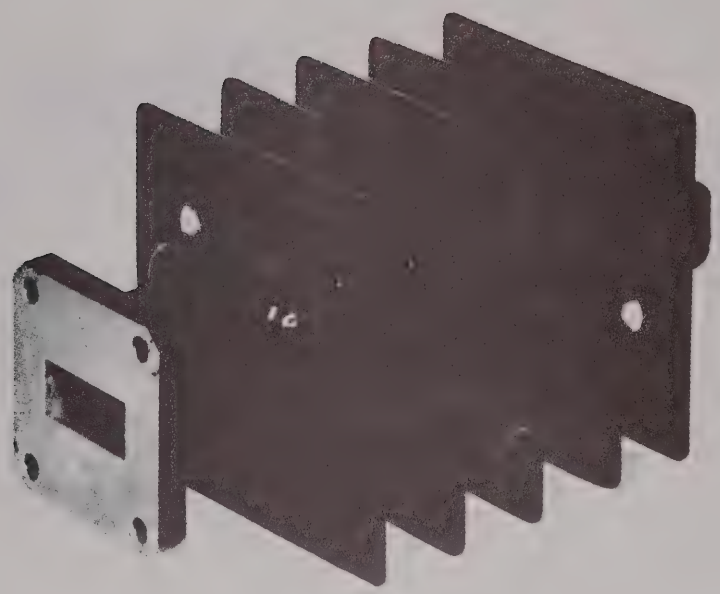
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load, Electrical DA-147/U	aluminum		11-1/2	8-7/8	32-7/8	90

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-147/U					

DUMMY LOAD, ELECTRICAL DA-148/U



UNCTIONAL DESCRIPTION:

A portable, general purpose, high power waveguide type radio frequency dummy oad used to terminate radio frequency transmission lines of radars. The dummy oad prevents radiation of energy by absorbing and then dissipating the applied ower. The unit may be used with pressurized or nonpressurized systems.

ELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Dummy Load DA-3/UP, DA-21/U, DA-107/URM-84, DA-117/U, S-231/AP, TS-231A/AP and NT-66AHT. Similar to Bogart Model B4063.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other end and a section of high loss material on the inside to absorb radio frequency energy. The waveguide is terminated with Flange UG-138/U for use with Waveguide RG-68/U; however,

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:	MIL-D-(Ord), Dwg C8212206		
PROCUREM'T COG.:	Army	DESIGN COG.:	Army, Ord
F.I.I.N.:	5985-090-3008	FUNCTIONAL CLASS. NO.:	12.3.1

DUMMY LOAD, ELECTRICAL DA-148/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

all known flanges may be adapted to the mounting configuration without changing the electrical characteristics. Fins may be added to the waveguide for greater heat dissipation.

Power Supply: None.

Frequency Range: 7.05 to 10.0 kilomegacycles per second.

Power Range: 275 watts average, minimum without fins; 400 watts average, minimum with fins; 460 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Operating Temperature: 300°C with fins, 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Company, 315 Seigel Street, Brooklyn 6, New York; Contract No. DA-069-ORD-1788; Approximate Cost per Unit, $116.97.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-10390.

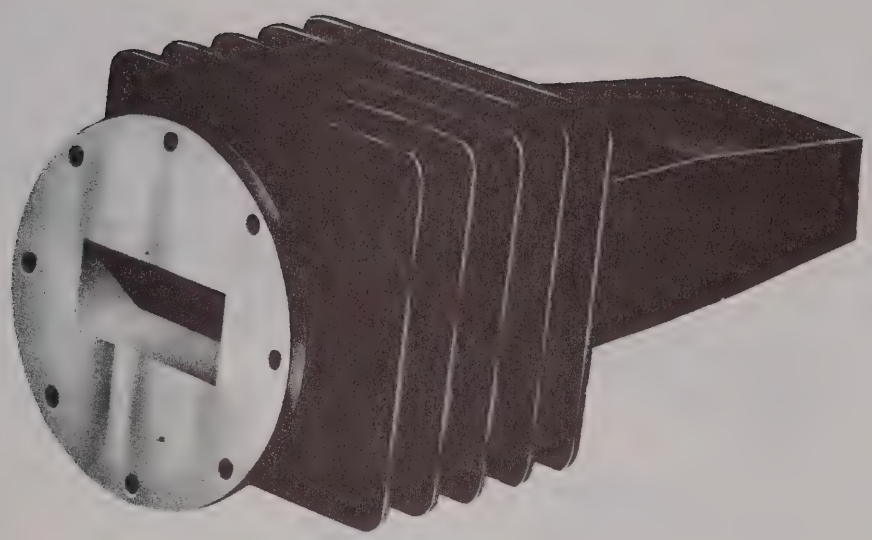
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load. Electrical DA-148/U	alum-inum		3-1/8	2-1/2	6-3/8	1-1/4

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-148/U					

DUMMY LOAD, ELECTRICAL DA-149/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose, high power waveguide type radio frequency dummy load used to terminate radio frequency transmission lines of radars. The dummy load prevents radiation of energy by absorbing and then dissipating the applied power. The unit may be used with pressurized or nonpressurized systems.

RELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Dummy Load DA-4/UP, DA-11/UP, DA-19/U, DA-74/UP and DA-128/UP. Similar to Bogart H4063.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment consists of a section of waveguide with a flange on one end, a shorting plate on the other end, and a section of high loss material on the inside to absorb radio frequency energy. The waveguide is terminated with Flange UG-407/U for use with Waveguide RG-95/U; however,

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:	MIL-D-(Ord), Dwg C8212208		
PROCUREM'T COG.:	Army	DESIGN COG.:	Army, Ord
E.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 1

DUMMY LOAD, ELECTRICAL DA-149/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

all known flanges may be adapted to the mounting configuration without changing the electrical characteristics. Fins may be added to the waveguide for greater heat dissipation.

Power Supply: None.

Frequency Range: 3.95 to 5.85 kilomegacycles per second.

Power Range: 700 watts average, minimum without fins; 1000 watts average, minimum with fins; 2000 kilowatts peak, minimum with or without fins.

Voltage Standing-Wave Ratio: 1.10 maximum over entire frequency range.

Operating Temperature: 300°C with fins, 232°C without fins.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Company, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-10393.

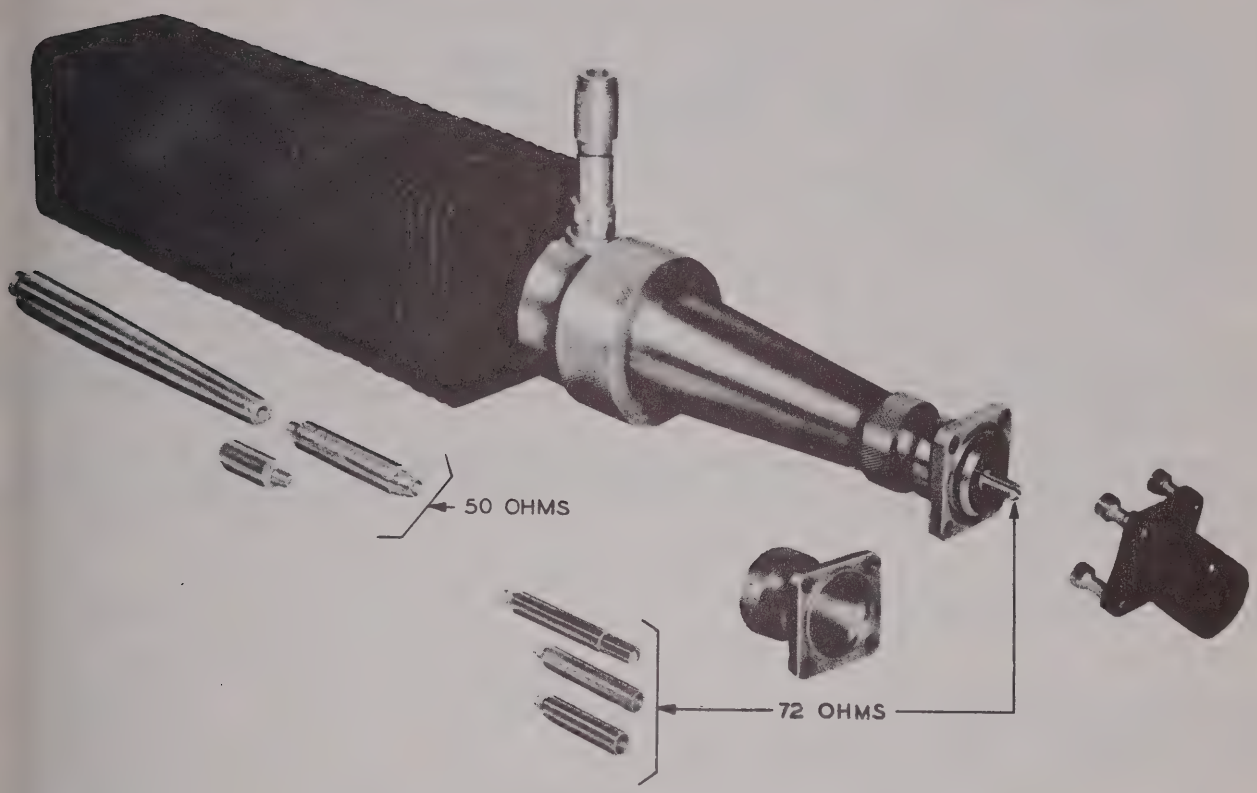
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load Electrical DA-149/U	alum-inum		4-1/8	3-5/8	9-3/4	5

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Dummy Load, Electrical DA-149/U					

PHANTOM ANTENNA AND ATTENUATOR TS-74/UPM
(TEST SET, RADAR, TS-74/UPM)



UNCTIONAL DESCRIPTION:

A loading device employed in the testing of radar sets. It provides a power ab-
orbing termination for the RF transmission line into which the radar transmitter
an work with very little radiation into space. It also includes a probe for coupling
st equipment to the transmission line. Sensitivity, frequency, and power meas-
rements may be made through this probe with suitable measuring equipment.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Consists of a coaxial structure surrounded by black cooling fins and containing a high loss dielectric. RF energy is converted into heat by the high loss dielectric and the heat is dissipated by the cooling fins.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Limited Standard		
TOCK NOS.	7CAC-274375	R16-AN-TS-74/UPM	3F4325-74
ROCUREM'T INFO.:	USAF Spec. MIL-P-435A dated 9 March 1953		
ROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, ARL
.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 1
	- Electronics Test Equipment -		TS-74/UPM

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

PHANTOM ANTENNA AND ATTENUATOR TS-74/UPM
(TEST SET, RADAR, TS-74/UPM)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 2700 to 3400 megacycles per second.
Power Dissipation: 200 watts maximum average power.
250 kilowatts maximum peak power.
Voltage Standing Wave Ratio: 1.5 decibels or 1.19 decibels (maximum).
Coupling Loss: 36, ±0.2 decibel.
Attenuation: 25 to 30 decibels.
Input Impedance: 50 or 72 ohms.
Temperature Range: -40° F. to +120° F.

MANUFACTURERS' OR CONTRACTORS' DATA:

Galvin Manufacturing Corporation, Chicago, Illinois; Contract No. 329-DAY-44, Unit Cost, $267.85.

Western Electric Company, New York, New York; Contract No. 816-45RA, 21 November 1944, Unit Cost, $221.30; Contract No. 2108-45, 15 March 1945, Unit Cost $214.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS74-2 (Maintenance Instructions).

SHIPPING DATA:

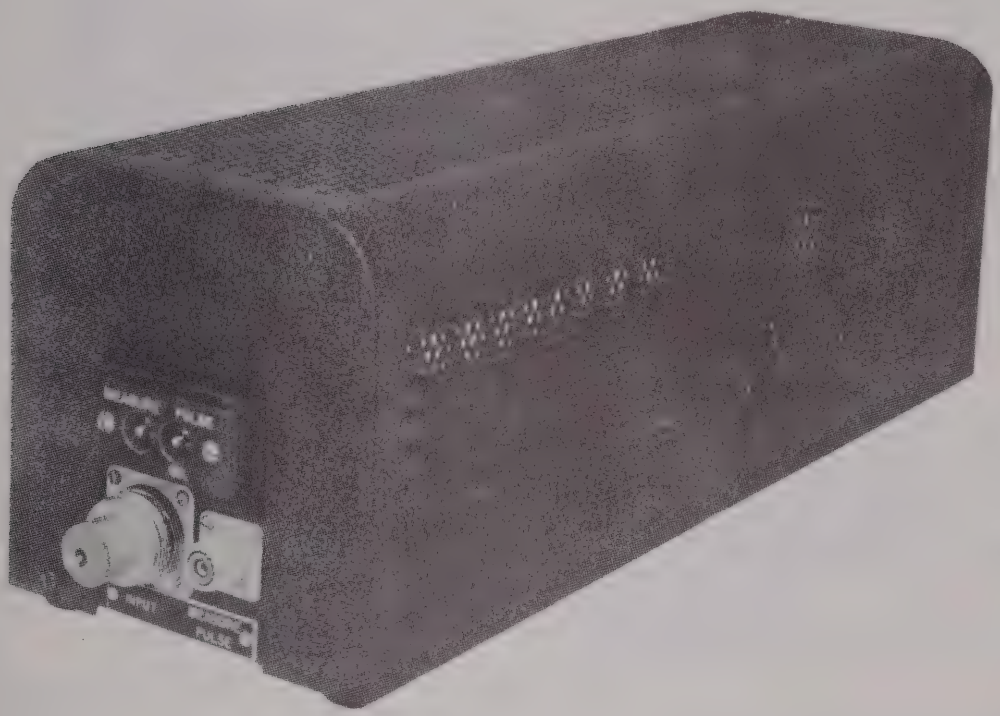
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Phantom Antenna and Attenuator TS-74/UPM (Shelf Package, Water Resistant Carton)	0.56	24	8	5	12

PHANTOM ANTENNA AND ATTENUATOR TS-74/UPM
(TEST SET, RADAR, TS-74/UPM)

QUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Phantom Antenna and Attenuator TS-74/UPM		7CAC-274375 3F4325-74	20	5	3	8.875
1	Case CY-488/UPM		7CAC-175395 2Z1891-488	21	5-1/2	3-1/3	
1	Dust Cap		2Z1619-19				
1	Fitting Transmission Line		2Z4384-30				
1	Fitting Transmission Line		2Z4384-31				
1	Instruction Book		6D9810-74				

DUMMY LOAD TS-90/AP
(DUMMY LOAD, ELECTRICAL, TS-90/AP)



UNCTIONAL DESCRIPTION:

A portable resistance element loading device used to provide a 50-ohm termination or making overall performance tests on the modulator of radars such as AN/APQ-7 nd AN/APQ-13. A voltage top is made across the 1-ohm resistor and is brought in ultiple at the "measure pulse" jack and terminal posts to provide for pulse meas-rement and observation by means of an oscilloscope. No controls or indicators are rovided.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Three carbon-coated non-inductive resistance elements connected in series constitute the dummy load. Two resistors have a resistance of 24.5 ohms each and the other has a resistance of 1 ohm.

ower Supply: None required.

requency Range: 0 to 2 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-274427		3F4325-90
PROCUREM'T INFO.: Exhibit ENG-237			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			TS-90/AP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD TS-90/AP
(DUMMY LOAD, ELECTRICAL, TS-90/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Input Power Range: 0 to 500 watts.

Impedance: 50 ±3.5 ohms while dissipating 400 ±20 watts at ambient temperatur of 25 ±5° C.

Accuracy: ±5% of DC resistance, 0 to 1 megacycle per second.
±10% of DC resistance, 1 to 2 megacycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

The Vendo Company, Kansas City, Missouri; Contract No. AF 33(038)1788 11 December 1950; Approximate Cost per Unit, $74.83.

Western Electric Company, 195 Broadway, New York 7, New York; Contrac No. 342-44, 31 December 1943; Approximate Cost per Unit, $197.60 (terminated).

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS90-3 (Maintenance Instructions).

TO 16-35TS90-13 (Overhaul Instructions and Parts Breakdown).

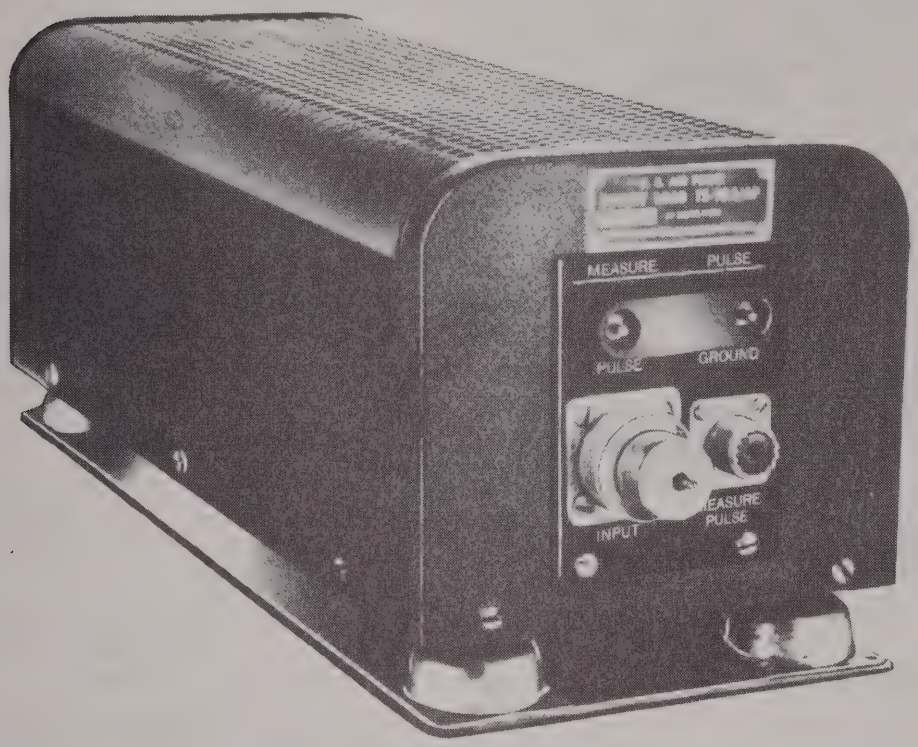
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	
1	Dummy Load TS-90/AP (Shelf Package, Water Resistant Carton)	0.59	21	7	7	8.0

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weigh (Lbs.
				H	W	D	
1	Dummy Load TS-90/AP		7CAC-274427 3F4325-90	20	6-1/2	6	
1	Technical Manual TM 11-1074						

DUMMY LOAD TS-90A/AP
(DUMMY LOAD, ELECTRICAL, TS-90A/AP)



UNCTIONAL DESCRIPTION:

A portable, general purpose, resistance element loading device used to provide 50-ohm termination for making overall performance tests on radar modulators. rovision is made to connect an oscilloscope for pulse measurement and observa-on. It is used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

This equipment is interchangeable with Dummy Load TS-90/AP, but is a rugged-ed version containing shock and vibration resistant features.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This equipment contains three non-inductive resistors con-nected in series. Two of them have resistances of 24.5 ohms each, and the third has a resistance of 1 ohm. Output is taken off the 1 ohm resistance, making in effect, a 50 to 1 voltage divider.

ower Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.	7CAC-274433	N16-L-86208-6140	3F4325-90A
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			TS-90A/AP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD TS-90A/AP
(DUMMY LOAD, ELECTRICAL, TS-90A/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 0 to 2 megacycles per second.
Input Power: 500 watts, maximum.
Input Voltage: 5000 volts, peak.
Input Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:
The Vendo Company, 7400 E. 12th Street, Kansas City, Missouri; USAF Contract No. AF 33(038)17886.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-35TS90-3 (Maintenance Instructions).
TO 16-35TS90-13 (Overhaul Instructions with Parts Breakdown).
TM 11-1074 (Instruction Book).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load TS-90A/AP (Shelf Package, Water Resistant Carton)	0.59	7	15	7	8

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-90A/AP	Aluminum	7CAC-274433 N16-L-86208-6140 3F4325-90A	5-7/8	14-1/8	6	7
1	Book of Instructions						

TEST LOAD UNIT TS-101/AP
(TEST SET, INDICATOR, TS-101/AP)

UNCTIONAL DESCRIPTION:

A portable special purpose unit used to simulate load on Range Unit CP-5/APS-15 Radar Set AN/APS-15A. It provides test points for range, altitude, plan position dicator, count, and modulator trigger circuits.

ELATIONSHIP TO OTHER EQUIPMENT:

TS-101/AP is generally used in conjunction with Test Oscilloscope TS-100/AP to ovide test load for AN/APS-15A Range Unit.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: Consists of capacitors arranged to simulate load and provide the necessary test points.

ower Supply: The test load does not require any power source other than the AN/APS-15A output for its operation; however, power is supplied to the range unit through the test load.

ange: Pin D (C101), 10,000 micromicrofarads, ±10%.

t.: Pin G (C102), 400 micromicrofarads, ±10%.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Limited Standard		
TOCK NOS.	7CAC-274356	ASO-R16-AN-TS-101/AP	3F4325-101
ROCUREM'T INFO.:			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, ARL	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			TS-101/AP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

TEST LOAD UNIT TS-101/AP
(TEST SET, INDICATOR, TS-101/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

PPI: Pin E (C103), 500 micromicrofarads, ±10%.
Count: Pin C (C104), 200 micromicrofarads, ±10%.
Mod.: Pin F (C105), 1000 micromicrofarads, ±10%.

MANUFACTURERS' OR CONTRACTORS' DATA:

United Cinephone Corporation, Torrington, Connecticut; Order No. 928-DAY-44 23 May 1944, Approximate Cost per Unit, $15.00; Order No. 2D72-45, 31 March 1945, Approximate Cost per Unit, $15.00; Order No. 368-45, 12 January 1945, Approximate Cost per Unit, $15.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS101-2 (Maintenance Instructions).

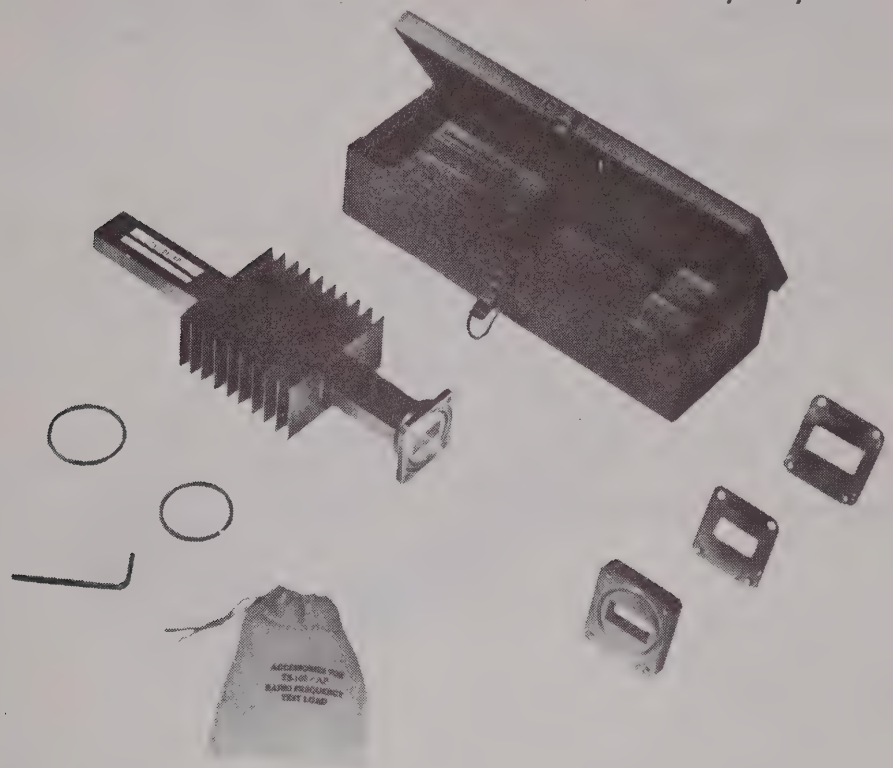
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Test Load Unit TS-101/AP (Shelf Package - Water Resistant Carton)	0.17	5	5	12	3

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Test Load Unit TS-101/AP Including:	Metal	7CAC-274356 3F4325-101	2-13/16	2-3/4	11-3/8	1.625
1	Cord CX-237/U		1800-322850047 R16-AN-CX-237/U 3E-6000-237	120 long			
1	Instruction Book TO 16-35TS101-2		6D981-101				

RF TEST LOAD TS-108/AP
(DUMMY LOAD, ELECTRICAL, TS-108/AP)



UNCTIONAL DESCRIPTION:

A portable, general purpose unit designed to provide a matched load which ab-rbs RF energy without appreciable reflection or radiation. It is used in bench sting of radar sets as a transmitter load for these equipments.

ELATIONSHIP TO OTHER EQUIPMENT:

TS-108/AP and TS-108A/AP differ only in the respect that the latter is smaller physical size.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: Consists of a section of 1" x 0.5" x 0.05" waveguide carrying ten rectangular cooling fins and terminating at the open end in a standard choke fitting. The other end of the waveguide is filled with a mixture of aquadag-coated sand and uncoated sand and is closed with a metal plate soft soldered in position.

ower Supply: None required.

requency Range: 9300 to 9450 megacycles per second.

ower Input: 0 to 150 watts average power; 0 to 200 kilowatts peak power.

anding Wave Ratio: Less than 1.05 alone; less than 1.10 with adapters. (Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Substitute Standard		
TOCK NOS.	7CAC-274353	N16-RT-75228	3F4325 - 108
ROCUREM'T INFO.: MIT Radiation Lab.Dwg.No.B-2674, BuAer Spec. No. 2674			
ROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuAer	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			TS-108/AP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

RF TEST LOAD TS-108/AP
(DUMMY LOAD, ELECTRICAL, TS-108/AP)

MANUFACTURERS' OR CONTRACTORS' DATA:

Bernard Rice and Sons, Inc., 325 Fifth Avenue, New York 16, New York; Contract No. NOa(s)-3670; Order Nos. 365-DAY-44, 837-DAY-45RA.

Lambert Meter Company, Plainfield, New Jersey.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

NavAer 08-5QS-15 (Maintenance Instructions).
TO 16-35TS108-3 (Maintenance Instructions).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	RF Test Load TS-108/AP (Shelf Package, Water-Resistant Carton)	0.10	11	5	3	6.5

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	RF Test Load TS-108/AP		7CAC-274353 N16-RT-75228 3F4325-108	9-3/16	3	1-5/8	1.016
1	Adapter UG-144/AP		7CWX-7818615P1 R16-AN-UG-145/U 2Z3288-144	1-5/8	1-5/8	1/32	0.020
1	Adapter UG-145/AP		7CWX-UG145AP R16-AN-UG-145/U 2Z3288-145	1-13/16	1-13/16	1/32	0.023
1	Case CY-247/AP			9-9/16	3-11/16	1-15/16	1.156
1	Adapter UG-80/U		8850-101650 R16-AN-UG-80/U	1-3/4	1-3/4	13/32	0.266
1	Bag Accessories						0.094
1	Gasket			1.659	0.105		0.002
1	Gasket			1.522	0.092		0.002

DUMMY ANTENNA TS-208/MPM

UNCTIONAL DESCRIPTION:

A general purpose, dummy load designed to replace the antenna of an IFF radar ystem when tuning and aligning the equipment.

ELATIONSHIP TO OTHER EQUIPMENT:

Used in conjunction with Adapter M-358 and Test Antenna TS-210/MPM in alignent of IFF equipment.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This dummy antenna consists of Plug PL-259-A with a 47-ohm, 1-watt resistor soldered between the center pins and the shell inside of the connector.

ower Supply: None required.

requency Range: 157 to 187 megacycles per second.

put Impedance: 50 ohms.

put Signal: RF from transmitter.

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.	7CAC-274394		3F4325-208
ROCUREM'T INFO.: SigC Dwg. SC-B-12010			
ROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			TS-208/MPM

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY ANTENNA TS-208/MPM

MANUFACTURERS' OR CONTRACTORS' DATA:

Belmont Radio Corporation, 5921 West Dickens Avenue, Chicago 39, Illinois; Army Order 3200-SCRL-43; Belrad dwg. A-201-886; Approximate Cost per Unit, $5.30, May 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TM 11-1308 (Technical Operation of RC-182-A and RC-282-A).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Antenna TS-208/MPM		7CAC-274394 3F4325-208	1-5/8	3/4 dia.		0.2

DUMMY LOAD TS-234/UP

UNCTIONAL DESCRIPTION:

A portable, general purpose dummy load, used in field and depot to permit test-g of pulse modulators and viewing of the characteristics of their output during opera-on without radiation of radio frequency energy. A voltage divider arrangement ermits the connection of a portion of the output to an oscilloscope for the visual resentation and for measurement. A single high voltage connector is mounted on e end for connection to modulator output. A connecting cable is included. A pair pin jacks provide terminals for connecting the oscilloscope.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Basically the circuit is a resistive impedance which converts the electrical energy into heat. A tap-off provides the necessary voltage division.
ower Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Limited Standard		
TOCK NOS.	7CAC-274416		3F4325-234
ROCUREM'T INFO.: USAF Exhibit WLENG-2070 dated 31 August 1948			
ROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			TS-234/UP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD TS-234/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: Up to 2 megacycles per second.
Power Dissipation Rating: 1800 watts average, maximum.
Maximum Voltage Rating: 5000 volts, peak.
Voltage Division Ratio: 50 to 1.
Input Impedance: 16 ohms, resistive.

MANUFACTURERS' OR CONTRACTORS' DATA:
Western Electric Company, New York, New York; Navy Contract NXsr-38866
Approximate Cost per Unit, $250.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-55-323 (Spare Parts List).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-234/UP		7CAC-274416 3F4325-234	9-3/8	18-1/2	8	10

DUMMY LOAD TS-234A/UP

'UNCTIONAL DESCRIPTION:

A portable general purpose dummy load used in field and depot to permit the esting of pulse modulators and the viewing of the characteristics of their output uring operation without radiation of radio frequency energy. A voltage divider rrangement permits the connection of a portion of the output to an oscilloscope or the visual presentation and for measurement. A single high voltage connector s mounted on one end for connection to modulator output. A connecting cable is ncluded. A BNC connector provides terminals for connecting the oscilloscope.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to TS-234/UP except the "A" model is a ruggedized version which meets hock and vibration requirements.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: Basically the circuit is a resistive impedance which converts the electrical energy into heat. A tap-off provides the necessary voltage division.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Alternate Standard		
STOCK NOS.	7CAC-274413		3F4325-234A
PROCUREM'T INFO.:	Exhibit ENG-275 dated 1 August 1950		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, RADC
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 1
- Electronics Test Equipment -			TS-234A/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD TS-234A/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Supply: None.
Frequency Range: Up to 2 megacycles per second.
Power Dissipation: 1275 watts.
Operating Voltage: 5000 volts, peak.
Voltage Division Ratio: 100 to 1.
Input Impedance: 16 ohms, resistive, hot; 18 ohms, resistive, cold.

MANUFACTURERS' OR CONTRACTORS' DATA:
Network Manufacturing Company, 213 West 5th Street, Bayonne, New Jersey; USAF Contract No. AF 33(038)21331; Approximate Cost per Unit, $250.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 33AA7-18-13 (Overhaul Instructions with Parts Breakdown).

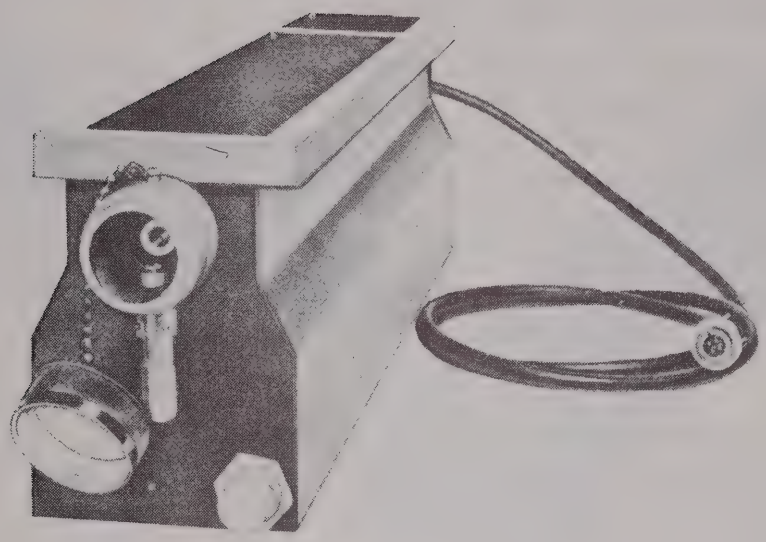
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-234A/UP		7CAC-274413 3F4325-234A	9-3/8	18-1/2	8	9

DUMMY ANTENNA TS-235/UP



UNCTIONAL DESCRIPTION:

A portable, general purpose, dummy load which provides a power absorbing ermination into which a transmitter can operate without radiating into space. It ncludes a terminated probe incorporated into the input connector for coupling test quipment to the transmission line in order that test signals may be transmitted and eceived through a known loss.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Circuity consists of a coaxial structure of 1-5/8 inch diameter containing a dissipative dielectric. A fan mounted inside the unit aids in the dissipation of heat.

ower Supply: 115 volts, AC, 400 cycles per second, single phase, 15 watts.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Standard		
TOCK NOS.	7CAC-274397	F16-L-86220-2676	3F4325-235
ROCUREM'T INFO.:	Spec. MIL-D-16211 (Ships) dated 1 April 1951		
ROCUREM'T COG.:	Navy	DESIGN COG.:	Navy, BuShips
.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
	- Electronics Test Equipment -		TS-235/UP

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY ANTENNA TS-235/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 500 to 1600 megacycles per second.
Power Rating: 1000 watts, 10 kilovolts peak; 200 watts with fan disconnected.
Nominal Input Impedance: 50 ohms, non-reflecting.
Test Probe Loss: 50 decibels ±0.5 decibels at 1300 megacycles per second.
Probe Loss Over Frequency Range: ±2 decibels.

MANUFACTURERS' OR CONTRACTORS' DATA:

Barlow Engineering Company, New York, New York; Navy Contract Nos. NObsr-42492, dated 29 June 1948, and NObsr-43142, dated 7 December 1948.

Specialty Spraying and Machine Company, New York, New York; Navy Contract No. NObsr-52720, dated 27 June 1951; Approximate Cost per Unit, $665.00.

Western Electric Company, New York, New York; USAF Contract No. AF 33(038)-15722, dated 5 September 1950; Approximate Cost per Unit, $488.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,457 (A) (Instruction Book).
TO 16-35-TS235-1 (Operating and Maintenance Instructions).
TO 16-35-TS235-5 (Instruction Book).

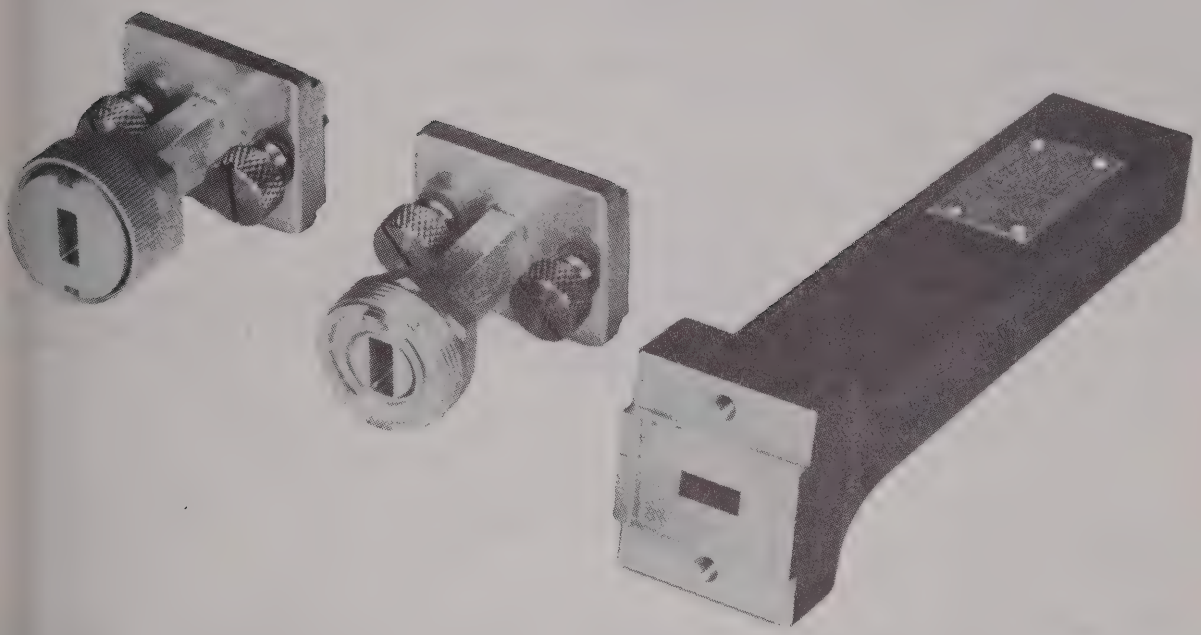
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Antenna TS-235/UP (Export Packed)	0.99	8-1/4	32	6-1/2	27.0

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Antenna TS-235/UP	Aluminum	7CAC-274397 F16-L-86220-2676 3F4325-235	6-7/8	30	4-7/8	19.5

DUMMY LOAD TS-253/AP
(DUMMY LOAD, ELECTRICAL, TS-253/AP)



UNCTIONAL DESCRIPTION:

A portable, general purpose, radio frequency waveguide type dummy load which ovides a matched load absorbing radio frequency energy output of radar sets under st without appreciable reflection or radiation. It is used in field and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

rcuit Information: The equipment is essentially a waveguide containing power-dissipating material in cavities in the sidewalls. There is a special type input connector designed to cause a smaller reflection than standard connectors when radio frequency power is fed to the dummy load.

The radio frequency energy is converted into heat by the absorbing material in the lossy sections. The heat is conducted through the aluminum waveguide to the atmosphere. The lossy sections are especially designed to match the impedance of the waveguide.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Development		
TOCK NOS.	1690-327879548		3F4325-253
ROCUREM'T INFO.:	USAF Spec. No. S-7004; USAF Dwg. No. C-6073-A		
ROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, ARL
.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1
	- Electronics Test Equipment -		TS-253/AP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD TS-253/AP
(DUMMY LOAD, ELECTRICAL, TS-253/AP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None.
Frequency Range: 23,500 to 24,500 megacycles per second.
Voltage Standing Wave Ratio: 1.15 maximum.
Power Range: 35 watts, average; 115 kilowatts, peak.
Temperature Range: -40° C. to +55° C.
Humidity Range: Up to 95%.
Altitude Range: Up to 10,000 feet, operational.
Up to 50,000 feet, non-operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bernard Rice's Sons, Incorporated, New York, New York; USAF Order No. 490-DAY-45RA; Approximate Cost per Unit, $125.00; USAF Order No. 879-45AR, dated 4 June 1945; Approximate Cost per Unit, $70.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Instruction Book.

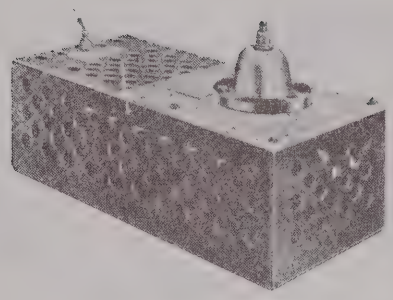
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-253/AP	Aluminum	1690-327879548 3F4325-253	1-1/2	6-1/16	1-1/4	4 (complete)
1	Transmission Line CG-362/U			1-9/16 long			
1	Transmission Line CG-363/U			1-9/16 long			
1	Case CY-374/AP	Aluminum	1690-298298394 2Z1891-374	2	8-1/2	3	
1	Instruction Book		6D9810-253				

DUMMY LOAD TS-279/UPM



UNCTIONAL DESCRIPTION:

A portable, general purpose non-inductive resistor used as a dummy modulator oad.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The equipment is ceramic coated, wire wound, and is contained in a perforated metal box. Connections are made through Corning glass insulator assembly.

ower Supply: None required.

esistance: 1000 ohms.

laximum Power: 160 watts.

oltage: 25,000 volts peak.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			3F4325-279
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			TS-279/UPM

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD TS-279/UPM

MANUFACTURERS' OR CONTRACTORS' DATA:

A. F. Smuckler and Company, Inc., 202-208 Tillary Street, Brooklyn 1, New York Order No. 25439-P-49-2; Contract No. W36-039-sc-47/80; Approximate Cost per Unit, $22.67, 31 May 1949.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

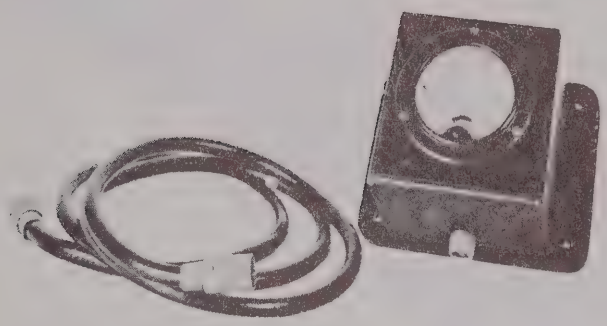
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-279/UPM	Metal	3F4325-279	4	12-3/4	5-1/2	5.5
2	Cable			18 long			

DUMMY ANTENNA TS-329/U
(DUMMY LOAD, ELECTRICAL, TS-329/U)



UNCTIONAL DESCRIPTION:

A portable, test unit used to provide a dummy load in bench testing the RF output of radio transmitters. It connects directly to the transmitter output by means f an RF cable. In this way, transmitter operation can be tested without radiation f a signal. Qualitative indication of output is provided on an RF ammeter.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Antenna A-68-A. Used in testing Radio Sets such as AN/ARC-1 and N/ARC-4.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The circuity consists of non-inductive resistance in series with a thermocouple ammeter.

ower Supply: None required.

requency Range: Up to 160 megacycles per second without reactive load.

esistance Load: 50 ohms, non-inductive.

laximum Power Dissipation: 12.5 watts.

hermocouple Ammeter Range: 0 to 0.5 amperes.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.		F16-L-85859-9462	2A203A-329
PROCUREM'T INFO.: Navy Spec. RE9122(Aer)			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuAer	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY ANTENNA TS-329/U
(DUMMY LOAD, ELECTRICAL, TS-329/U)

MANUFACTURERS' OR CONTRACTORS' DATA:
General Industries Company, Elyria, Ohio; Navy Contract NOa(s)-5423.
Western Electric Company, New York, New York; Spec. No. ES-694259.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Antenna TS-329/U Including:		F16-L-85859-9426 2A203A-329	3	5	4	2
1	RF Cable RG-8/U			60 long			
2	Connector Type 49195 (Navy), or Type PL-259-A (Army)						

DUMMY LOAD TS-338/UP

FUNCTIONAL DESCRIPTION:

A portable, general purpose, high power, waveguide type, RF dummy load, which is used to terminate RF transmission lines of radio and radar sets to prevent radiation of energy and still permit testing of certain components of the system.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Electro Impulse Laboratory, Part No. 100L.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment consists of a finned aluminum casting, containing a graphite cement mixture, an adapter which is used as a connection between the dummy load and the radar set, a rubber gasket and cover (for storage purposes), and attaching hardware.

Power Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-274440	R16-AN-TS-338/UP	3F4325-338
PROCUREM'T INFO.: Spec. 16L5 (Aer) Dtd 1 Dec 47; USAF Exhibit WLENG-2067			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuAer	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			TS-338/UP

DUMMY LOAD TS-338/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 2500 to 3750 megacycles per second.
Power Rating: Will dissipate 600 watts average for 4 hours, and 1 megawatt peak.
Voltage Standing Wave Ratio: 1.1 to 1 for dummy load alone; 1.2 to 1 for the combination of dummy load and adapter.
Operating Life: 2000 hours minimum.

MANUFACTURERS' OR CONTRACTORS' DATA:

Electro Impulse Laboratory, 62 White Street, Red Bank, New Jersey, Navy Contract N383s-38883; Approximate Cost per Unit, $500.00, May 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35TS338-2 (Operation and Service Instructions).
TO 16-35TS338-3 (Maintenance Instructions).
TO 16-35TS338-4 (Parts Catalog).

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-338/UP	Cast Aluminum	7CAC-274440 R16-AN-TS-338/UP 3F4325-338	6-7/8	23	5-1/2	25
1	Adapter CG-384/UP			4			

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

TEST LOAD TS-346/UP

REAR VIEW

FRONT VIEW

FUNCTIONAL DESCRIPTION:

This equipment is designed to absorb the power radiated by a radar system. It consists of a screen and a metal sheet placed one-quarter wave length apart, with the intervening space filled with absorbent material. The purpose of the equipment is to prevent stray radio frequency energy from interferring with the radar set under test or with other nearby radar sets. It may also be used to preserve radar silence.

RELATIONSHIP TO OTHER EQUIPMENT:

Used primarily with Radar Sets AN/APS-20B, 20C, but it may be used with other similar sets.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Frequency Range: 2700 to 2900 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-000300	R16-AN-TS-346/UP	3F4325-346
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	

- Electronics Test Equipment - TS-346/UP

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

TEST LOAD TS-346/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Input: This unit will absorb the total power output of the AN/APS-20B, 20C, radar systems.

Amount of Re-radiation: Approximately 1%.

MANUFACTURERS' OR CONTRACTORS' DATA:

Andover-Kent Aviation Company; Navy Contract Nos. N383s-8023 and N383s-8152.

Hazelton Electronics Corporation, Great Lakes, Long Island, New York; Navy Contract N383s-8125; Approximate Cost per Unit, $480.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

NAVAER 16-5S-505 (Instruction Book).

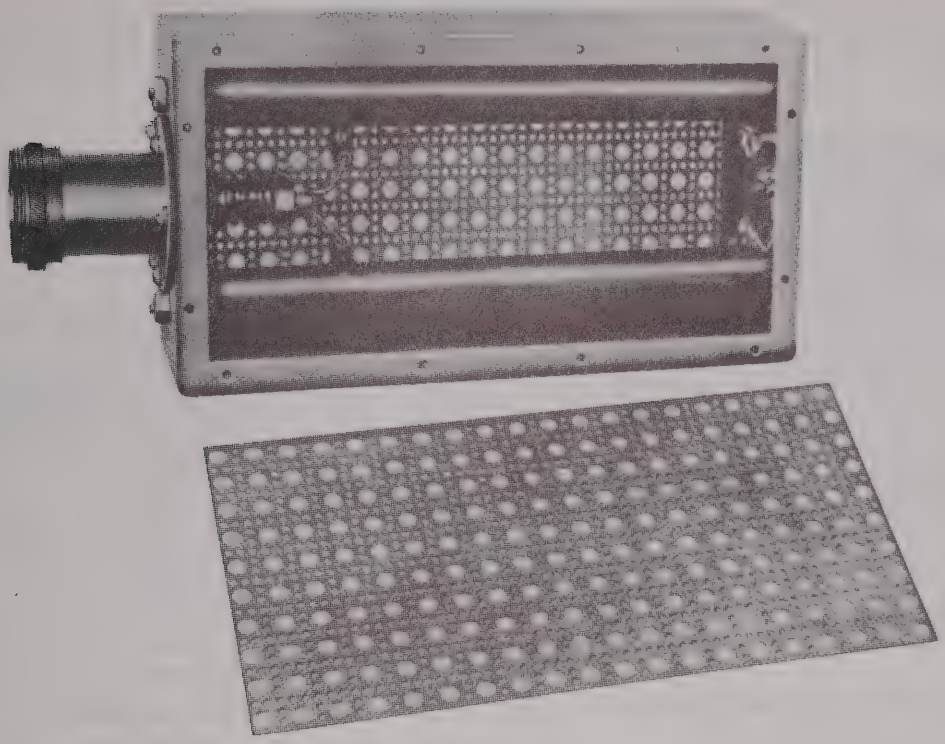
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Absorbing Screen TS-346/UP		7CAC-000300 R16-AN-TS-346/UP 3F4325-346	48	120	3	100
1	Instruction Book						

DUMMY LOAD TS-366A/TPS-10
(DUMMY LOAD, ELECTRICAL, TS-366A/TPS-10)



UNCTIONAL DESCRIPTION:

A portable, special purpose, resistor type, modulator dummy load used to absorb radio frequency output of a modulator to prevent radiation during test. It is sed in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

This unit is used in testing Radar Set AN/TPS-10A. It connects to the output of Modulator MD-41A/TPS-10.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment contains two 100-ohm, 160 watt, non-inductive, resistors connected in parallel, and a radio frequency receptacle.

Power Supply: None.

Power Range: 320 watts, average; 1257 watts, peak.

Impedance: 50 ohms resistive.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Limited Standard		
STOCK NOS.	7CAC-274382		2Z3903-366A
PROCUREM'T INFO.: USAF Spec. No. C-7400			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			TS-366A/TPS-10

Project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD TS-366A/TPS-10
(DUMMY LOAD, ELECTRICAL, TS-366A/TPS-10)

MANUFACTURERS' OR CONTRACTORS' DATA:
Zenith Radio Corporation, 6001 Dickens Avenue, Chicago, Illinois; USAF Order No.5000-DAY-45GR; Approximate Cost per Unit, $125.00, Zenith Dwg. No. SG-5178.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-55-259 (Spare Parts List).

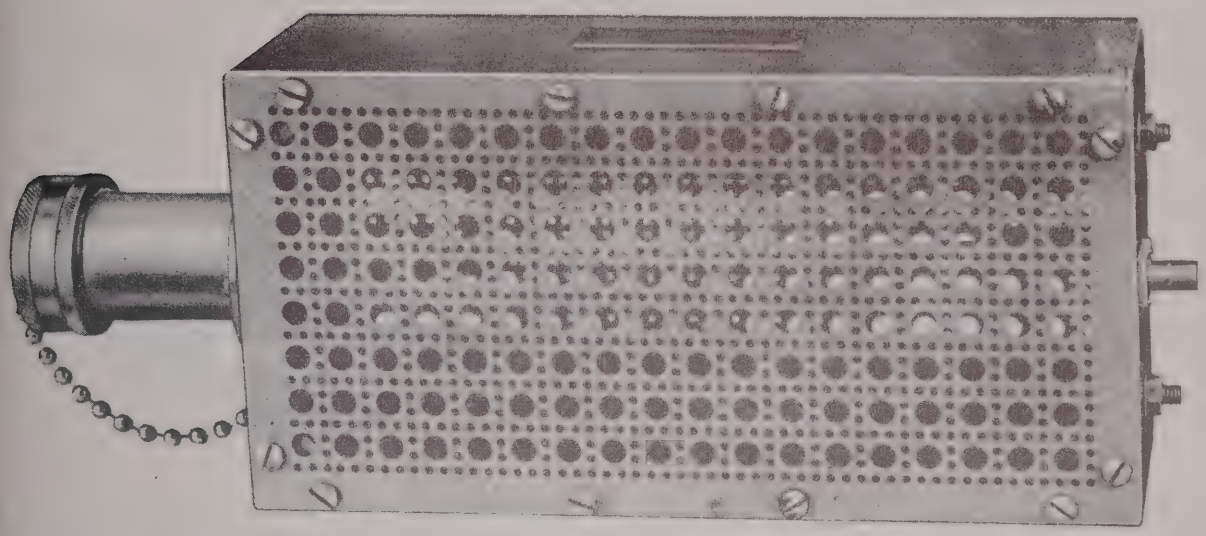
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load TS-366A/TPS-10 (Shelf-Packed)	0.25	18	6	4	10

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-366A/TPS-10	Metal	7CAC-274382 2Z3903-366A	13-1/2	5-5/8	3-1/2	4.5

DUMMY LOAD TS-366B/TPS-10
(DUMMY LOAD, ELECTRICAL, TS-366B/TPS-10)



UNCTIONAL DESCRIPTION:

A portable, special purpose, resistor type, modulator dummy load used to absorb radio frequency output of a modulator to prevent radiation during test. It is sed in organizational, field, and depot testing. Provision is made for attachment an oscilloscope to view the pulsed output of the modulator.

ELATIONSHIP TO OTHER EQUIPMENT:

This unit is used in testing Radar Set AN/TPS-10A.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This equipment contains two 100-ohm, 160 watt, non-inductive resistors connected in parallel, and a Receptacle UG-37A/U on one end, and a Receptacle UG-290/U on the other end. A voltage divider with a 100 to 1 ratio is included to permit viewing of the high voltage pulses.

ower Supply: None.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.	Substitute Standard		
TOCK NOS.	7CAC-274421		2Z3903-366B
ROCUREM'T INFO.: USAF Exhibit WLENG 2077			
ROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	
- Electronics Test Equipment -			TS-366B/TPS-10

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD TS-366B/TPS-10
(DUMMY LOAD, ELECTRICAL, TS-366B/TPS-10)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Rating: 320 watts, average; 1257 watts, peak.
Impedance: 50 ohms, resistive.

MANUFACTURERS' OR CONTRACTORS' DATA:
Munston Manufacturing and Services, Inc., New York, New York; USAF Contract No. AF-33(038)12588; Approximate Cost per Unit, $85.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-35TS366-2 (Operation and Service Instructions).
TO 16-35TS366-4 (Parts Catalog).

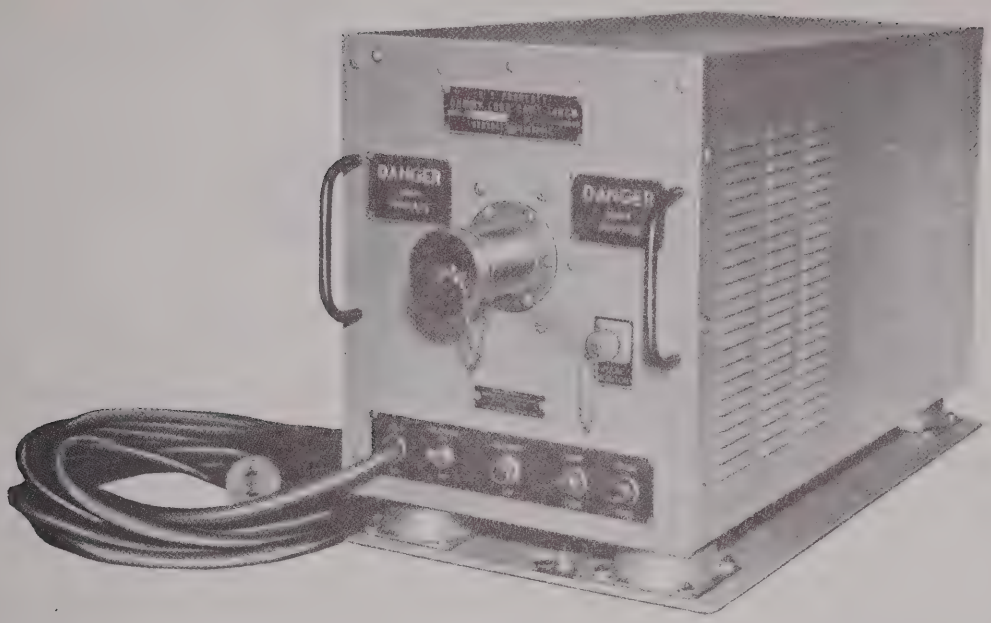
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load TS-366B/TPS-10 (Shelf-Packed)	0.25	18	6	4	10

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load TS-366B/TPS-10	Aluminum	7CAC-274421 2Z3903-366B	15-1/4	5-5/8	3-1/2	4.5

DUMMY LOAD 14ACN



FUNCTIONAL DESCRIPTION:

A portable, general purpose, low-reactance dummy load which is used to dissipate pulse power from the modulator in radar equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The circuit is made up of a load termination and a pulse monitor. The terminating resistance load consists of twelve noninductive resistors connected in parallel. A capacity voltage divider makes it possible to observe the modulator pulse applied to the dummy load. By changing the length of a five-foot, 50-ohm, coaxial cable connected in parallel with a fixed 40-micro-microfarad capacitor, the available voltage may be altered for viewing purposes.

Power Supply: 115 volts, AC, 60 cycles per second, single-phase, for blower.

Input Impedance: 50 ohms.

Power Dissipating Rating: 3 kilowatts, average.

Peak Voltage Rating: 100 to 200 volts when 10,000 volts is applied from the modulator.

Power Handling Capacity: 1800 watts without additional cooling; 3000 watts with cooling.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			
PROCUREM'T INFO.:	Navy Spec. RE13A1085		
PROCUREM'T COG.:	Navy	DESIGN COG.:	Navy, BuShips
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.1

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DUMMY LOAD 14ACN

MANUFACTURERS' OR CONTRACTORS' DATA:
General Electric Company, Syracuse, New York; USAF Contract No. AF 33(038 29660; Navy Contract Nos. NXsr-76195 and NXsr-96353, 7 October 1947.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 33AA7-8-1 (Operation and Service Instructions).
TO 33AA7-8-4 (Parts Catalog).
TO 33AA7-8-14 (Spare Parts List).
NAVSHIPS 91010 (Instruction Book).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Dummy Load 14ACN	3.51	15	13-1/4	30-1/2	85
1	Box of Spare Parts	2.8	18-1/2	23-1/2	11-1/8	76

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load 14ACN	Aluminum		13-1/4	11-3/4	26	44
1	Pulse Cable						
1	Box of Spare Parts			16-3/4	20-1/8	9-3/8	67

TERMALINE COAXIAL LOAD RESISTOR
(Resistor, Termaline Coaxial Load)
Model No. 80-F
(Bird Electronic Corporation)

FUNCTIONAL DESCRIPTION:

A general purpose resistive load designed for use as a dummy load for CW, AM, and FM transmitters. The resistor may also be used as a 50-ohm impedance standard, as a termination for slotted lines, with a vacuum tube voltmeter to indicate RF power, and as a termination when measuring coaxial insertion devices.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The resistor is designed to have a constant 51.5-ohm input impedance. The active power dissipating portion of the resistor is the outer surface of a cylindrical film type resistor which acts as the center conductor of a self-terminated coaxial structure. The resistor is cooled by air convection.

Power Supply: None.

Power Range: 5 watts (maximum).

Frequency Range: 0 to 11,000 megacycles per second.

Voltage Standing Wave Ratio: 1.1 (average).

RF Connector: UG-23/U, type "N", for use with UG-21B/U Plug on RG-8/U Cable.

Input Impedance: 51.5 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bird Electronic Corporation, 1800 East 38th Street, Cleveland 14, Ohio.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
	- Electronics Test Equipment -		Bird Model 80-F

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

TERMALINE COAXIAL LOAD RESISTOR
(Resistor, Termaline Coaxial Load)
Model No. 80-F
(Bird Electronic Corporation)

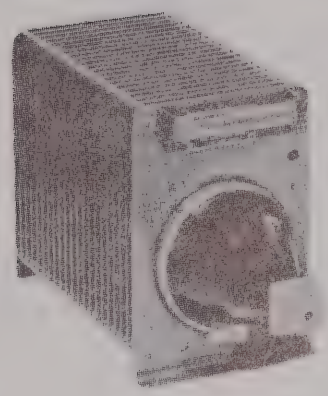
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Termaline Coaxial Load Resistor Bird Model 80-F			3-3/8 long		3/4 dia.	5/16

TERMALINE COAXIAL LOAD RESISTOR
MODEL NO. 82
(Bird Electronic Corporation)



UNCTIONAL DESCRIPTION:

A portable, general purpose, test instrument used as a dummy load for testing r standby purposes on high frequency, coaxial circuited transmitters. It permits sting without radiation into space.

ELATIONSHIP TO OTHER EQUIPMENT:

Used to test Radio Set AN/CPN-2A.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: The power dissipating portion of the termaline resistor is the outer surface of a cylindrical film type resistor which acts as the center conductor of a self-terminated coaxial structure. The entire assembly is immersed in a coolant when is use at higher power levels.

ower Supply: None.

requency Range: 0 to 2000 megacycles per second.

esired Operating Range: 0 to 2700 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-274388		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 1	

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

TERMALINE COAXIAL LOAD RESISTOR
MODEL NO. 82
(Bird Electronic Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Impedance: 51.5 ohms.

Power Absorption: 500 watts maximum.

Voltage Standing Wave Ratio: Less than 1.1 to 1000 megacycles per second.
Less than 1.2 to 2000 megacycles per second.

Cooling: Forced air.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bird Electronic Corporation, Cleveland, Ohio; Approximate Cost per Unit, $150.00, 1 March 1950.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Handbook "Instrumentation for Coaxial Transmission."

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Termaline Coaxial Load Resistor Model No. 82		7CAC-274388	8-7/16	5-15/16	19-1/4	17
1	Adapter CA-8-B (couples to UG-21/U or UG-21B/U)						

TERMINATION, COAXIAL
Type No. 874-WM
(General Radio Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose load resistor used for impedance matching, establishing reference conditions, and terminating filters and attenuators.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The unit consists of a 50-ohm cylindrical resistor mounted in a tapered coaxial holder.
Power Supply: None.
DC Resistance: 50 ohms ±1%.
Maximum Power: 0.5 watt continuous, 500 watts peak.
Voltage Standing-Wave Ratio: Less than 1.05 to 1000 megacycles per second, 1.08 to 2000 megacycles per second, 1.13 to 4000 megacycles per second.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:
PROCUREM'T COG.: DESIGN COG.: Commercial
F.L.L.N.: FUNCTIONAL CLASS. NO.: 12.3.1

TERMINATION, COAXIAL
Type No. 874-WM
(General Radio Company)

MANUFACTURERS' OR CONTRACTORS' DATA:
General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $17.50.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Catalog.

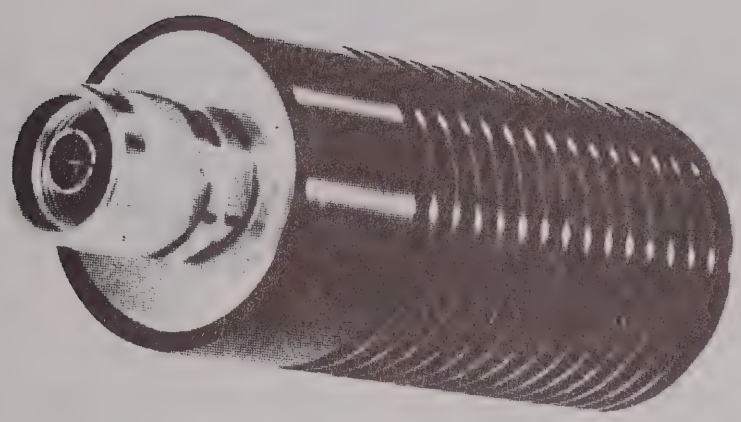
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Termination, Coaxial General Radio 874-WM	metal					.156

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Termination, Coaxial General Radio 874-WM					

TERMINATION, COAXIAL
Part No. 160-20M-50
(Sierra Electronic Corporation)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, power-absorbing load used to prevent radiation during transmitter tuning. The termination may also be used as a load for wattmeters or other applications where power absorption with a low standing-wave ratio is required.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The radio frequency power is fed to the termination via a Type N coaxial connector and is dissipated by integral cooling fins which permit the termination to operate at full-rated power without the use of forced-air cooling. The device is shielded.

Power Supply: None.

Frequency Range: 4000 megacycles per second, maximum.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy

DESIGN COG.: Commercial

FUNCTIONAL CLASS. NO.: 12. 3. 1

F. I. I. N.:

TERMINATION, COAXIAL
Part No. 160-20M-50
(Sierra Electronic Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Voltage Standing-Wave Ratio: Less than 1.15 to 4000 megacycles per second.
Ambient Temperature: 40°C, maximum.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sierra Electronic Corporation, 3885 Bohannon Drive, Menlo Park, California; Contract No. N383(17)-462a; Approximate Cost per Unit, $35.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Bulletin 114.

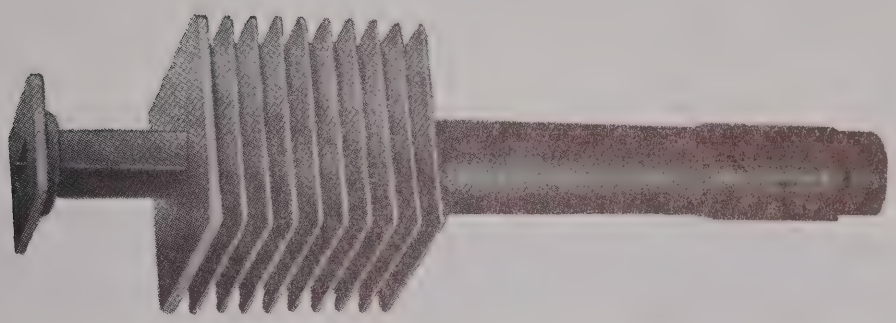
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Termination, Coaxial Sierra 160-20M-50			4-1/8	1-5/8 dia.		

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Termination, Coaxial Sierra 160-20M-50					

DUMMY LOAD
(HIGH POWER WAVEGUIDE TERMINATION)
Model No. 242
(Sperry Gyroscope Company)



FUNCTIONAL DESCRIPTION:

A portable general purpose waveguide termination used in a test situation where high power absorption and low voltage standing wave ratio are essential. It can be used as dummy load in place of antennas for high-power transmitter testing.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Dummy Load DA-21/U.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of a short section of standard rectangular waveguide followed by a section with walls of high-loss material. Input connectors are similar to standard AN cover flanges. The opposite end of the instrument is terminated in a soldered short to prevent microwave leakage. Cooling fins are placed along the guide in the region of maximum heating.

Power Supply: None.

Frequency Range: 7000 to 10,000 megacycles per second.

Maximum Peak Power: 0.80 megawatt.

Maximum Average Power: 280 watts.

Voltage Standing Wave Ratio: Does not exceed 1.15.

Transmission Line: AN type RG-51/U.

Cover Flange: Similar to AN type UG-51/U.

Operating Temperature Range: -40°C. (-40°F.) to +55°C. (+131°F.).

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.1	
- Electronics Test Equipment -			Sperry Model No. 242

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DUMMY LOAD
(HIGH POWER WAVEGUIDE TERMINATION)
Model No. 242
(Sperry Gyroscope Company)

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Inc., Great Neck, Long Island, New York; Approximate Cost per Unit, $200.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "Microline Instruments" Publication No. 23-30.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Dummy Load Sperry Model No. 242			3-1/2	3-1/2	12-11/32	6-3/16

ATTENUATOR CN-29/UP
(ATTENUATOR, FIXED, CN-29/UP)

FUNCTIONAL DESCRIPTION:

A portable, general purpose unit used to attenuate RF power fed to receivers in testing dummy transmit-receive boxes and signal generators. It is used in organizational, field, and depot testing. Attenuation value is marked on the attenuators in decibels.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This attenuator consists of a metal tube with a 5" long metallized glass insert permanently enclosed. A type N jack on one end fits RF Plug UG-21B/U and other type N plugs. A type N plug on the other end fits RF Jack UG-22B/U and other type N jacks.

Power Supply: None.

Frequency Range: 2400 to 3335 megacycles per second.

Characteristic Impedance: 49 ohms.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075608		2Z396-29
PROCUREM'T INFO.: Spec. MIL-A-4637(USAF) 4 May 1953; USAF Dwg. No. 47B56813			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		RDB IDENT. NO.: 12. 3. 2	
- Electronics Test Equipment -			CN-29/UP

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-29/UP
(ATTENUATOR, FIXED, CN-29/UP)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Attenuation: 20 decibels, nominal.
Accuracy: ±0.3 decibel of indicated attenuation.

MANUFACTURERS' OR CONTRACTORS' DATA:
Electro-Impulse Laboratory, 62 White Street, Red Bank, New Jersey; Contract No. AF 33(038)13130, 8 June 1950.
Weinschel Engineering Company, 123 Williams Street, New York 7, New York; Contract No. AF 33(038)22791, 27 March 1951.
Electron-Radar Products, Inc., 1041 Pulaski Road, Chicago, Illinois; Contract No. AF 33(038)23972.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
TO 16-35TS196-3 (Maintenance Instructions).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-29/UP		7CAC-075608 2Z396-29	5-1/8	1/2 dia.		0.5

ATTENUATOR CN-32/U

UNCTIONAL DESCRIPTION:

A small, general purpose, low power, fixed pad type attenuator, used to isolate ıdividual stages of an RF amplifier which facilitates separate adjustments of these :ages.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to WE Co. Code X-66445-G.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This unit consists of a coaxial structure with a N type plug at one end and a N type jack at the other end. Built into this structure is a Pi network of carbon deposited resistors to inhibit the transmission of radio frequency energy sufficiently to cause specified attenuation.

ower Supply: None required.

requency Range: 500 to 1500 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	3300-286066075		2Z394-23
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	
- Electronics Test Equipment -			CN-32/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-32/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Impedance: 50 ohms, nominal coaxial.
Attenuation: 6 decibels, fixed.
Loss: ±1 decibel.
Voltage Standing Wave Ratio: ±3 decibels.

MANUFACTURERS' OR CONTRACTORS' DATA:
Western Electric Company, 120 Broadway, New York 5, New York.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

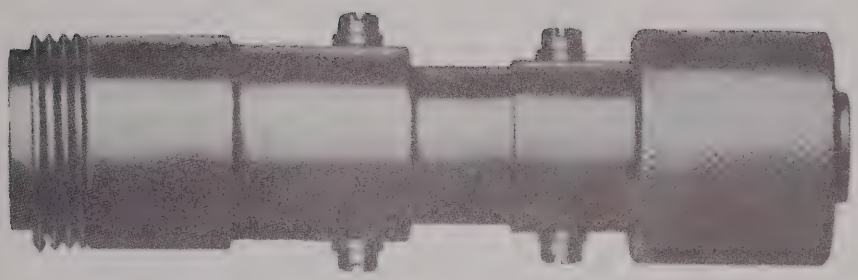
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator CN-32/U (Shelf Package)	0.01	3	1	1	0.3

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-32/U	Metal	3300-286066075 2Z394-23	2-1/2	5/8 dia.		0.25

ATTENUATOR CN-34/U



FUNCTIONAL DESCRIPTION:

A portable, special purpose, low power unit, used with other test equipment in organizational, field, and depot testing of a radar set. It is used to isolate individual amplifier stages to facilitate separate adjustment of these stages.

RELATIONSHIP TO OTHER EQUIPMENT:

This attenuator is used in testing Radar Set AN/TPS-1B. It is physically similar to Pre-Amplifier Pad TS-97/TPS-1, but has different electrical characteristics making it non-interchangeable electrically.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This unit consists of a coaxial structure with an N type plug at one end and an N type jack at the other end. Built into this structure is a Pi network of carbon deposited resistors to inhibit the transmission of radio frequency energy sufficiently to cause specified attenuation.

Power Supply: None required.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	3300-286066076	N16-A-97057-8351	2Z394.24
PROCUREM'T INFO.:			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	
- Electronics Test Equipment -			CN-34/U

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-34/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
Frequency Range: 0 to 1500 megacycles per second.
Power Rating: 1 watt, maximum.
Impedance: 50 ohms, nominal coaxial.
Normal Attenuation Value: 10 decibels.
Standing Wave Ratio in Decibels: ±2 decibels at 1300 megacycles per second.
Normal Attenuation Tolerance: ±0.5 decibel.

MANUFACTURERS' OR CONTRACTORS' DATA:
Western Electric Company, New York, New York; W.E. Type X-66445-J; Contract AF 33(038)29183; Approximate Cost per Unit, $33.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator, CN-34/U (Shelf Package)	0.01	3	1	1	0.3

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-34/U	Metal	3300-286066076 N16-A-97057-8351 2Z394.24	2-3/4	5/8 dia.		0.25

ATTENUATOR CN-42/UP
(ATTENUATOR, VARIABLE, CN-42/UP)

'UNCTIONAL DESCRIPTION:

A general purpose fixed attenuator pad used to decrease the strength of radio fre-uency signals fed to power meters and radar sets. Attenuation value is marked on he attenuator in decibels. It is used in organizational and field maintenance.

:ELATIONSHIP TO OTHER EQUIPMENT:

:LECTROMECHANICAL DESCRIPTION:

:ircuit Information: This equipment consists of a metal tube with a connector for a type N receptacle on the input end and a connector for a type N plug on the output end. It has a resistive center conductor consisting of a glass tube whose outer surface is coated with a thin high-resistance metallic film. This center conductor is permanently fixed in place.

'ower Supply: None.

'requency Range: 2400 to 3700 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075605	N16-A97061-3501	2Z396-42
PROCUREM'T INFO.:	USAF Exhibit WLENG-2106 dated 31 March 1949.		
PROCUREM'T COG.:	USAF	DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	

'' project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-42/UP
(ATTENUATOR, VARIABLE, CN-42/UP)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Attenuation: 10 decibels.
Accuracy: Attenuation: ±1.0 decibel.
Calibration: ±0.10 decibel.
Power Rating: 1 watt, average.
1000 watts, peak.
Duty Cycle: 0.001.
Frequency Sensitivity: 1.4 decibels.
Voltage Standing Wave Ratio: 1.25, maximum.
Nominal Impedance: 49 ohms (characteristic).
Temperature Range: -54° C. to +71° C., operating or non-operating.
Humidity Range: Up to 100%, operating or non-operating.
Altitude Range: Sea level to 10,000 feet, operating.
Sea level to 35,000 feet, non-operating.

MANUFACTURERS' OR CONTRACTORS' DATA:

PIB Products, Inc., 62 Court Street, Brooklyn, New York; Order No. 971-45-RA dated 12 January 1945.

Cover Dual Signal System Corporation (Electric Voice Corporation); Order No 3842-CEGSA-44; Approximate Cost per Unit, $40.00.

DeMornay Budd, Inc., New York 51, New York; Order No. 49-7245MIPR, dated 20 June 1949; Approximate Cost per Unit, $48.00.

Electron Radar Products, Inc., Chicago, Illinois; Contract No. AF 33(038)23971 dated 4 April 1951; Approximate Cost per Unit, $42.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator CN-42/UP (Shelf Packed)	0.04	10	2-3/4	2-1/2	1

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-42/UP	Silver plated brass	7CAC-075605 N16-A97061-3501 2Z396-42	5-3/32	3/4 dia.		0.5

ATTENUATOR CN-110/U
(ATTENUATOR, FIXED, CN-110/U)

FUNCTIONAL DESCRIPTION:

A portable, low power, broadband series, fixed pad attenuator used with other est equipment in organizational, field, and depot testing. It consists of a coaxial structure terminated at its input end with Female Coupling UG-46/U and at its out-out end with Male Coupling UG-45/U. It is flange mounted at each end, its input end mounting to the source of RF energy to be measured, and its output end mount-ng to the input end of a summation bridge. The attenuator serves to extend the range of the summation bridge.

RELATIONSHIP TO OTHER EQUIPMENT:

This unit is used with a Summation Bridge such as AN/URM-23.
Similar to PRD Type 136C except for nameplate.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075606-17		2Z396-110
PROCUREM'T INFO.:			
PROCUREM'T COG.:	USAF	DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 2	
	- Electronics Test Equipment -		CN-110/U

s project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR CN-110/U
(ATTENUATOR, FIXED, CN-110/U)

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The brass coaxial structure has metallized glass tubing mounted inside which offers a resistive load to the radio frequency energy transmitted. Therefore, this energy is attenuated by a fixed amount.

Power Supply: None.

Frequency Range: 1000 to 4000 megacycles per second, calibrated at 1000, 2500 and 4000 megacycles per second.

Attenuation: 10 decibels.

Voltage Standing Wave Ratio: Less than 1.3 over its frequency range.

Power Rating: 1 watt, maximum.

Input and Output Impedance: 50 ohms (nominal coaxial).

Tolerance: ±0.1 decibel.

MANUFACTURERS' OR CONTRACTORS' DATA:

Polytechnic Research and Development Co., Inc., Brooklyn 1, New York; USAF Contract W28-099-ac-426. PRD Dwg. B-10682. Approximate Cost per Unit $89.00, 1 January 1954.

National Electric Machine Shops, Inc., 919 Jesup Blair Drive, Silver Spring, Maryland; Navy Contract N-126(S)-29202.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

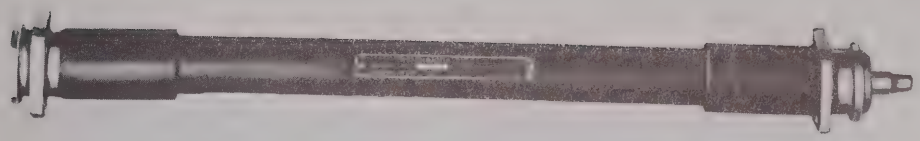
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuator CN-110/U (Domestic Packed)	1.04	20-1/2	9-1/2	9-1/4	5

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-110/U	Brass	7CAC-075606-17 2Z396-110	14-5/16	1-3/8	1-3/8	1

ATTENUATOR CN-168A/U
(ATTENUATOR, FIXED, CN-168A/U)



FUNCTIONAL DESCRIPTION:

A portable low power broadband series fixed pad attenuator used with other test equipment in organizational, field, and depot testing. It consists of a coaxial structure terminated at its input end with Female Coupling UG-46/U and at its output end with Male Coupling UG-45/U. It is flange mounted at each end, its input end mounting to the source of RF energy to be measured, and its output end mounting to the input end of a summation bridge. The attenuator serves to extend the range of a summation bridge such as AN/URN-20.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The brass coaxial structure has metallized glass tubing mounted inside which offers a resistive load to the radio frequency energy transmitted. Therefore, this energy is attenuated by a fixed amount.

Power Supply: None required.

Frequency Range: 1000 to 4000 megacycles per second.

Attenuation: 3 decibels.

Voltage Standing Wave Ratio: Less than 1.3 over its frequency range.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			2Z396-168A
PROCUREM'T INFO.: RADC Exhibit ENG-362			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, RADC	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	
- Electronics Test Equipment -			CN-168A/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

ATTENUATOR CN-168A/U
(ATTENUATOR, FIXED, CN-168A/U)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Rating: 1 watt, average.
Frequency Sensitivity: 0.5 decibel total.
Variation from Nominal Attenuation: ±0.5 decibel.
Input and Output Impedance: 50 ohms (nominal coaxial).
Calibration Accuracy: ±0.2 decibel.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bruno-New York Industries, Corp., 460 West 34th Street, New York 1, New York; USAF Contract No. AF 33(038)30604, Supplement No. 7, dated July 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

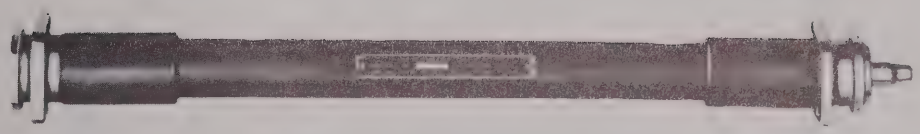
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator CN-168A/U	Brass	2Z396-168A	14-5/16	1-3/8	1-3/8	1

FIXED ATTENUATOR CN-169A/U



FUNCTIONAL DESCRIPTION:

A general purpose, broadband, series attenuator used to extend the range of radio test sets. This equipment includes a transmission line terminated at the input end with Female Coupling UG-46/U and at the output end with Male Coupling UG-45/U. The transmission line is flange mounted at each end.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to and interchangeable with Attenuator CN-169/U. The "A" model differs only in detailed electrical requirements.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment is a resistive type attenuator containing metalized-glass resistive elements.
Power Supply: None.
Frequency Range: 1000 to 4000 megacycles per second.
Attenuation: 6 decibels.
Voltage Standing Wave Ratio: 1.3 over the band.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075606-15		
PROCUREM'T INFO.:	RADC Exhibit ENG-362		
PROCUREM'T COG.:	Navy	DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	
- Electronics Test Equipment -			CN-169A/U

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FIXED ATTENUATOR CN-169A/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy: Calibration: ±0.2 decibel.
Attenuation: ±0.6 decibel.

Power Rating: 3 watts, minimum.
Frequency Sensitivity: 0.5 decibel, maximum.
Nominal Impedance: 50 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bruno-New York Industries, 460 West 34th Street, New York 1, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

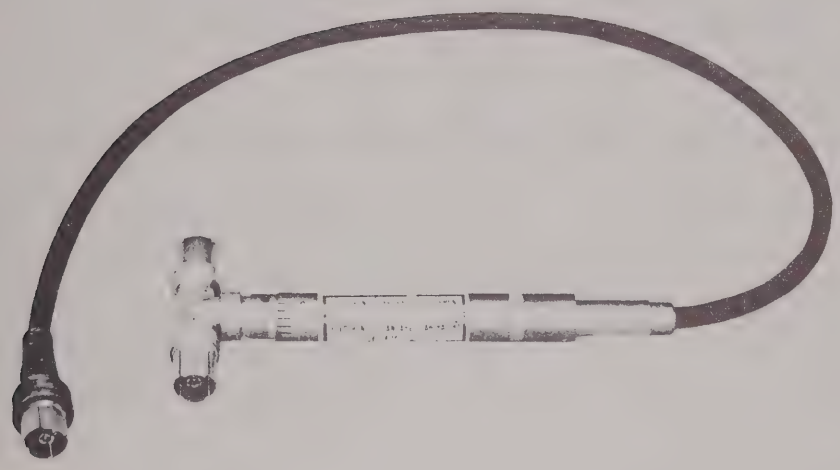
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Fixed Attenuator CN-169A/U	0.06	16	2-1/2	2-1/2	5

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Fixed Attenuator CN-169A/U		7CAC-075606-15	13-7/8		7/8 dia.	3-1/2

ATTENUATOR, COAXIAL
Type 874-GA
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, adjustable, mutual-inductance (waveguide-below-cutoff) type attenuator useful for producing known voltage ratios, measuring attenuation and adjusting voltage magnitude.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The unit consists of a loop that is positioned longitudinally within a hollow tube by the rotation of an outside sleeve. One turn of the sleeve produces a 20 decibel change in attenuation. The sleeve and tube are calibrated directly in decibels of relative attenuation on a micrometer-type scale. The absolute attenuation is the sum of the insertion loss and the attenuator reading. The input system is a short coaxial line with a connector on one end for connection to the power source and one on the other end for connection to a 50-ohm termination, an adjustable stub or any desired load.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			

PROCUREM'T INFO.:

DESIGN COG.: Commercial

PROCUREM'T COG.:

FUNCTIONAL CLASS. NO.: 12.3.2

F.I.I.N.:

ATTENUATOR, COAXIAL
Type 874-GA
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None.
Frequency Range: 100 to 4000 megacycles per second.
Attenuation Range: 120 decibels, relative.
Power Input: 150 volts at 1000 megacycles per second, maximum.
Power Output: 0.5 watt, maximum.
Attenuation Accuracy:
Stub-Terminated Input: ±(1% of difference in attenuation reading +0.2 decibel), direct reading.
50-Ohm Terminated Input: ±(1.5% of the difference in attenuation readings +0.2 decibel), when corrected by means of a supplied calibration chart.
Cutoff Frequency: 12,300 megacycles per second.
Voltage Standing-Wave Ratio Introduced into Line: Less than 1.03 at 1000 megacycles per second; less than 1.2 between 1000 and 4000 megacycles per second.
Voltage Standing-Wave Ratio Output: Less than 4 at 1000 megacycles per second; less than 5 up to 4000 megacycles per second.
Insertion Loss at 1000 Megacycles per Second:
Input Terminated in 50 Ohms: 18 decibels, minimum.
Input Terminated in Adjustable Stub: 20 decibels, minimum.
Directly Through Tee: Negligible.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $65.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

SHIPPING DATA:

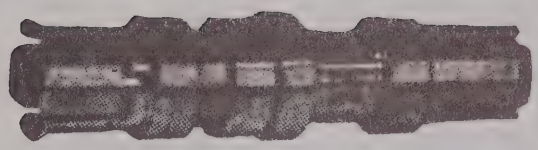
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Attenuator, Coaxial General Radio 874-GA					

ATTENUATOR, COAXIAL
Type 874-GA
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator, Coaxial General Radio 874-GA						1-1/4
1	Calibration Chart						

ATTENUATOR, COAXIAL
Type No. 874-G10
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, fixed, single section, T-type resistance pad used for adding a known attenuation in 50-ohm systems and for matching generators or loads to 50 ohms.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The unit consists of one disk resistor and two cylindrical resistors, as shunt and series elements, respectively.

Power Supply: None.

Attenuation: 10 decibels.

DC Resistance: 50 ohms ±1% when terminated in 50 ohms.

Voltage Standing-Wave Ratio: Less than 1.1 to 1000 megacycles per second, less than 1.2 to 3000 megacycles per second, less than 1.35 to 4000 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy

DESIGN COG.: Commercial

F.I.I.N.:

FUNCTIONAL CLASS. NO.: 12.3.2

ATTENUATOR, COAXIAL
Type No. 874-G10
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy of Attenuation in 50 Ohm System:
±1.5% of nominal attenuation at DC; ±0.2 decibels from stated value DC to 1000 megacycles per second; ±0.4 decibels to 2000 megacycles per second; ±0.6 decibels to 4000 megacycles per second.

Temperature Coefficient: Less than .0003 decibels per degree centigrade per decibel.

Maximum Power Input: 1 watt continuous, 3000 watts peak.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $30.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator, Coaxial General Radio 874-G10	metal					.125

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Attenuator, Coaxial General Radio 874-G10					

ATTENUATOR, VARIABLE WAVEGUIDE
Model No. 611
(Microwave Equipment Company)

FUNCTIONAL DESCRIPTION:

A portable, general purpose unit used to vary the attenuation of microwave power in waveguide components. A dial drive which may be calibrated provides a smooth adjustment without backlash.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This attenuator consists of a 3-inch section of RG-52/U (1 by 1-1/2 inch O. D.) waveguide in which a short section of metallized-glass attenuator strip is mounted and moved by means of a screw drive and a Gibbs multi-turn dial. The unit is supplied with standard UG-39/U Plain Flanges.

Power Supply: None.

Frequency Range: 8500 to 9600 megacycles per second.

Attenuation Range: 25.0 decibels.

Insertion Loss: 0.5 decibel.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.2	
	- Electronics Test Equipment -		Microwave 611

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR, VARIABLE WAVEGUIDE
Model No. 611
(Microwave Equipment Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Voltage Standing Wave Ratio: Maximum of 1.15 decibels.
Power Handling Capacity: 1 watt, average.

MANUFACTURERS' OR CONTRACTORS' DATA:
Microwave Equipment Company, Inc., North Caldwell, New Jersey.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	

ATTENUATOR
TYPE 130-B
(Polytechnic Research and Development Company)

UNCTIONAL DESCRIPTION:

A portable, general purpose, fixed coaxial pad used to attenuate radio frequency ower from a radio noise generator or a signal generator in testing radar sets. ttenuation value is fixed. Used in organizational, field, and depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

Used to test Radar Sets AN/CPS-4, AN/FPS-6, and AN/MPS-10.

LECTROMECHANICAL DESCRIPTION:

ircuit Information: Attenuation is obtained by means of a metallized resistive film coated on a dielectric inner conductor. The pad is enclosed in a casing terminated with UG-21/U and UG-27/U Adapters.

ower Supply: None.

requency Range: 2,000 to 10,000 megacycles per second.

ttenuation: 6 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-075607-7		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 2	

- Electronics Test Equipment - Polytechnic R&D 130-B

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ATTENUATOR
TYPE 130-B
(Polytechnic Research and Development Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Handling Capacity: Peak: 1 kilowatt.
Average: 1 watt.

Voltage Standing Wave Ratio: 1.25 maximum.

Accuracy: ±0.2 decibel at 4000 megacycles per second.
±0.8 decibel for full range.

Nominal Insertion Length: 7-29/32 inches.

MANUFACTURERS' OR CONTRACTORS' DATA:

Polytechnic Research and Development Company, 55 Johnson Street, Brooklyn 1, New York; Approximate Cost per Unit, $47.00, 1 September 1950.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog, "Precision Test Equipment."

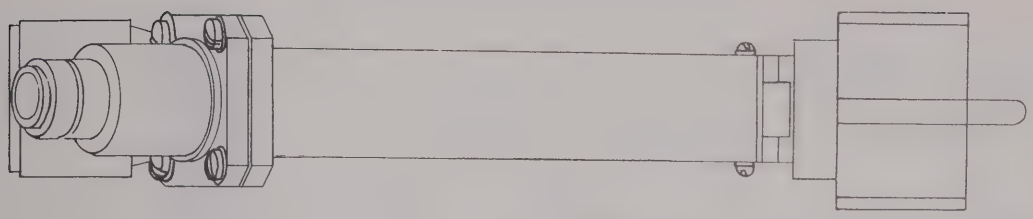
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuator Type 130-B	Silver plated brass	7CAC-075607-7	10	7/8 dia.		0.5

DIRECTIONAL COUPLER AN/URM-60



FUNCTIONAL DESCRIPTION:

A general purpose, radio frequency directional coupler which provides known attenuation at a specified frequency when inserted in a transmission line. The main line input connector mates with Plug UG-154/U; the main line load connector mates with Receptacle UG-352A/U; the secondary line connector mates with RF Plug UG-21C/U.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler consists of two parallel lengths of RF transmission line, coupled by means of axial slots, with terminations.
Power Supply: None.
Frequency Range: 2,000 to 4200 megacycles per second.
Coupling Loss: 40 decibels with less than 2 decibel variation over specified range.
Impedance: 50 ohms, nominal.
Voltage Standing Wave Ratio:
Main Line: Less than 1.2:1.
Secondary Line: Less than 1.5:1.
Effective Directivity: Greater than 20 decibels.
Operating Temperature: -40°C.(-40°F.) to +55°C.(+131°F.).

MANUFACTURERS' OR CONTRACTORS' DATA:

Airtron Inc., 20 East Elizabeth Avenue, Linden, New Jersey; Contract AF 33(604) 8614, June 1952; Approximate Cost per Unit, $200.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Alternate Standard		
STOCK NOS.	7CAC-225586		
PROCUREM'T INFO.:	USAF Exhibit WCE-345, 20 June 1952		
PROCUREM'T COG.:	USAF	DESIGN COG.: USAF, WADC, ARL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.3	
	- Electronics Test Equipment -		AN/URM-60

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DIRECTIONAL COUPLER AN/URM-60

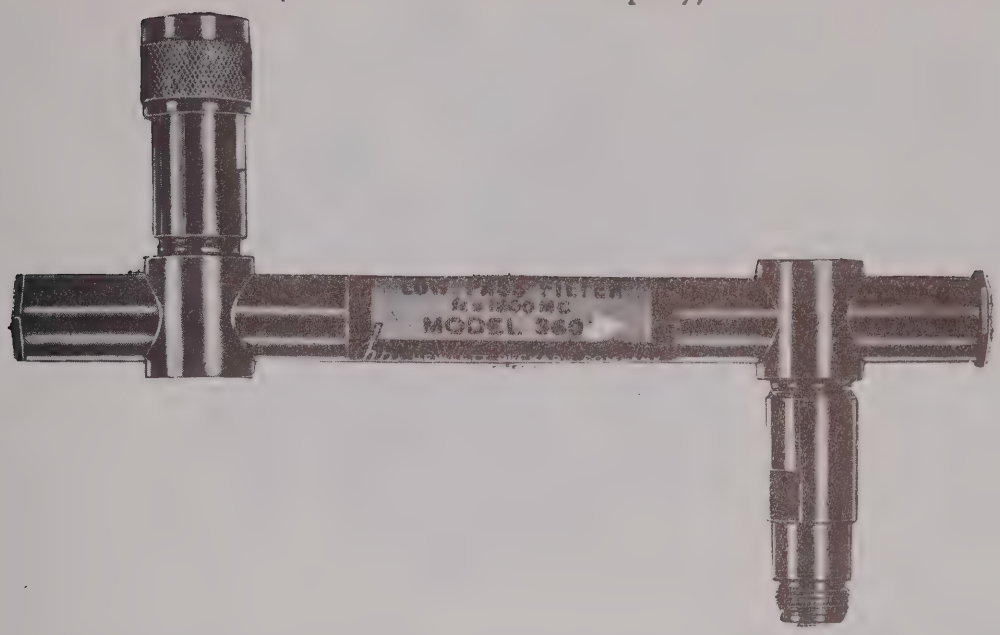
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler AN/URM-60		7CAC-225586				
	Including:						
1	Coupler CU-333/AP			8.5	1.5	4.5	1
1	Case CY-1326/URM			9.5	2.5	5.5	3/4

FILTER, LOW PASS
Model 360-A
(Hewlett-Packard Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose device which is used to facilitate microwave measurements by eliminating harmonics and permitting the transmission of energy at a single known frequency. By the isolation of a single frequency, provision is made for performing slotted line measurements, checking filter characteristics, determining receiver response, and other applications where harmonics are objectionable.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The unit consists of a brass tube fitted with a multi-section coaxial type filter. The ends are terminated in type N fittings, one male and one female. Attenuation in the pass bands is less than 3 decibels and attenuation in the rejection band is more than 50 decibels. No spurious responses are found up to three times the cut-off frequency.

Power Supply: None required.

Cut-Off Frequency: 700 megacycles per second.

Insertion Loss: Maximum of 3 decibels throughout the pass band.

Rejection: 50 decibels or more attenuation at 1.2 x (cut-off frequency).

Nominal Impedance: 50 ohms through pass band.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7 CAC-287931		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.3	
	- Electronics Test Equipment - Hewlett-Packard 360-A		

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

FILTER, LOW PASS
Model 360-A
(Hewlett-Packard Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Fittings: 1 Type N male (UG-21/U).
1 Type N female (UG-23/U).

MANUFACTURERS' OR CONTRACTORS' DATA:
Hewlett-Packard Company, 275 Page Mill Road, Palo Alto, California; Contract No. (33-604)55-6263, 24 May 1955; Approximate Cost per Unit, $50.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Hewlett-Packard Catalog 21-A.

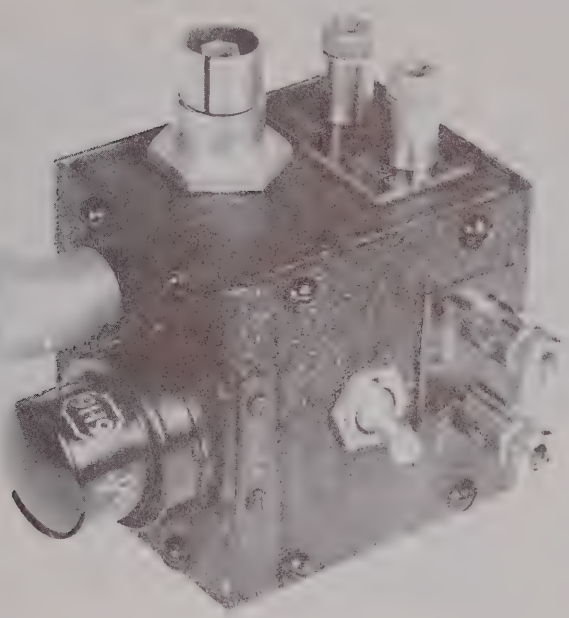
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Filter, Low Pass Hewlett-Packard 360-A	0.072	1-1/2	14-1/2	5-3/4	2

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Filter, Low Pass Hewlett-Packard 360-A		7CAC-287931	5/8	10-7/8	4-9/16	1-1/8

DIODE COUPLING HEAD BC-1201-A



UNCTIONAL DESCRIPTION:

A portable, special purpose unit, used in conjunction with a modulator, signal nerator, and an oscilloscope, in testing the performance of ground based beacon IFF equipment. This unit combines the functions of an impedance matching net-ork and an RF diode rectifier with variable cathode bias externally supplied, en-ling the associated oscilloscope to indicate the RF output of the prime equipment. e modulator pulse-modulates the output of the signal generator to trigger the prime uipment, whose output is indicated on the oscilloscope. This unit is used in field d depot testing.

ELATIONSHIP TO OTHER EQUIPMENT:

This unit is used in testing Beacon Transmitter Receivers such as AN/TPN-2. is part of Test Equipment IE-45-B.

LECTROMECHANICAL DESCRIPTION:

ower Supply: Filament voltage of 6.3 volts, AC, 50 to 60 cycles per second is sup-plied from the power supply unit of the modulator unit, as well as the diode bias. requency Range: 100 to 225 megacycles per second (from prime system output). ype of Reception: Pulse Modulated.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-225580	N16-A-22081-1006	2Z3275-1201A
PROCUREM'T INFO.:	Spec. 71-1785 (USAF)		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, C&N
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12.3.4

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DIODE COUPLING HEAD BC-1201-A

ELECTROMECHANICAL DESCRIPTION: (Continued)

Pulse Repetition Rate: 200 to 4000 pulses per second.

Diode Bias: 0 to 50 volts, DC, from modulator unit (0 volts when used with AN/TPN-2)

Input Impedance: 150 ohms.

Effective Input Impedance to Set under Test: 50 ohms (150 ohms paralled by 75 ohms signal generator impedance).

Output Impedance:

Bias: 47,000 ohms.

Marker: 4700 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Philco Corporation, Philadelphia, Pennsylvania; Army Order No. 2054-DAY-45-RA.

TUBE COMPLEMENT:

1 JAN-6H6.

REFERENCE DATA AND LITERATURE:

TO 16-40IE45-3 (Maintenance Instructions for IE-45).

TO 16-55-347 (Spare Parts List).

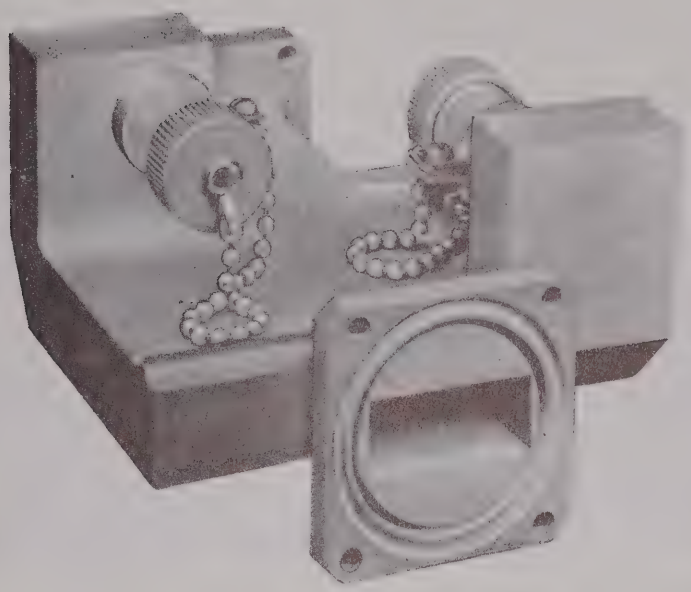
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Diode Coupling Head BC-1201-A	Aluminum	7CAC-225580 N16-A-22081-1006 2Z3275-1201A	2-1/2	2-5/8	2-1/8	1.0

DIRECTIONAL COUPLER CU-79/UP



UNCTIONAL DESCRIPTION:

A general purpose directional coupler which provides suitable radio frequency ›upling for test purposes to permit the measurement of power and standing wave ›tios in radio frequency transmission lines. The coupler is bidirectional and can easure both reflected and direct power.

ELATIONSHIP TO OTHER EQUIPMENT:

Similar to Western Electric Model X-66362B. Similar to CU-78/UP except for equency range and overall dimensions.

LECTROMECHANICAL DESCRIPTION:

rcuit Information: This unit consists of a 1-1/4 inch x 5/8 inch section of pressurized waveguide terminated in suitable coupling flanges. It has three round-type coupling holes in either side of the waveguide which couple to two separate auxiliary guides, both of which terminate in type N connectors.

›wer Supply: None required.

requency Range: 9320 to 9430 megacycles per second.

rectivity: 25 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
YPE CLASS.			
TOCK NOS.	1660-298292215		2ZA1300.34
ROCUREM'T INFO.: Navy Spec. RE13A1030			
ROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuShips	
.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
- Electronics Test Equipment -			CU-79/UP

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DIRECTIONAL COUPLER CU-79/UP

ELECTROMECHANICAL DESCRIPTION: (Continued)

Coupling Loss: 26 decibels nominal.
Coupling Accuracy: ±0.5 decibel.
Temperature Range: -40° F. to +120° F.
Fittings or Connectors:
Power Input: one UG-52/U Choke Flange.
Power Output: one UG-51/U Plain Flange.
Test Output: two UG-14/U Type N Connectors.

MANUFACTURERS' OR CONTRACTORS' DATA:

Western Electric Company, Inc., 120 Broadway, New York 15, New York; Navy Contract NXsr-83432; Western Electric Dwg. BL-409743.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

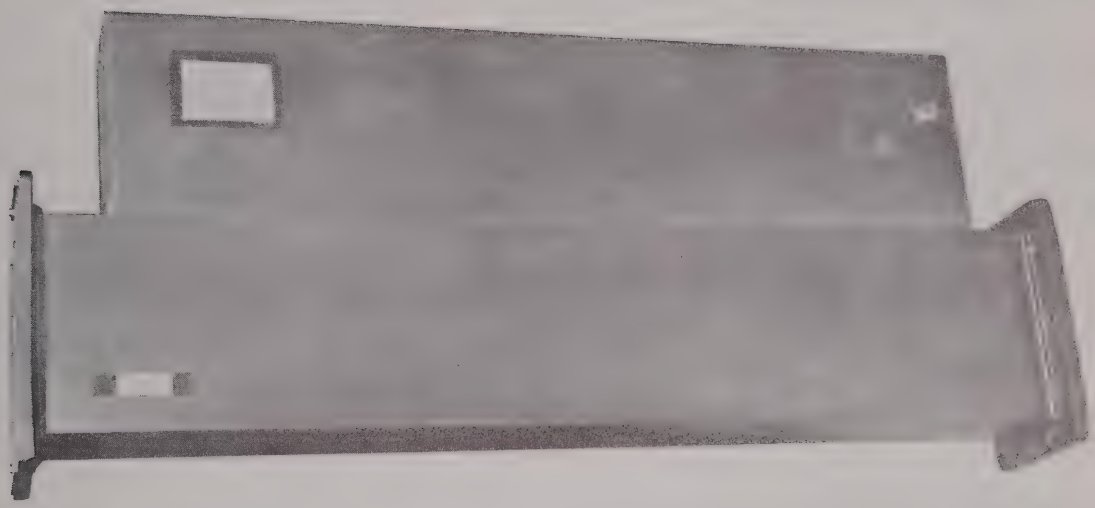
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler CU-79/UP		1660-298292215 2ZA1300.34	2-7/16	3-5/8	4-3/4	2.75

DIRECTIONAL COUPLER CU-225/U
(COUPLER, DIRECTIONAL CU-225/U)



FUNCTIONAL DESCRIPTION:

A general purpose unidirectional coupler which provides suitable radio frequency coupling for test purposes to permit the measurement of power and frequency. Each end is terminated in Waveguide Flange UG-417/U. A type "N" female output connector provides secondary line output. This equipment is used in field and depot maintenance.

RELATIONSHIP TO OTHER EQUIPMENT:

Secondary line output is designed for use with Cable RG-69/U, which connects to the test equipment.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The radio frequency energy to be directed enters the directional coupler from a waveguide where it is coupled to the secondary output line. Attenuated energy proceeds through a cable to the test equipment for analysis.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-225590		2Z3265-225
PROCUREM'T INFO.:	USAF Drawing 49D55944.		
PROCUREM'T COG.:	USAF	DESIGN COG.:	USAF, Rome
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	12. 3. 5

DIRECTIONAL COUPLER CU-225/U
(COUPLER, DIRECTIONAL CU-225/U)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: None required.
Frequency Range: 1130 to 1350 megacycles per second.
Coupling Loss: 35 decibels ±2 decibels.

MANUFACTURERS' OR CONTRACTORS' DATA:

Airtron, Inc., 101 East Elizabeth Avenue, Linden, New Jersey. Contract AF 33(038)15448 dated 18 August 1950; Approximate Cost per Unit, $125.00.

Kings Microwave Company, Inc., 50 Marbledale Road, Tuckahoe 7, New York. Contract AF 33(038)19413, dated 26 January 1951; Approximate Cost per Unit, $120.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

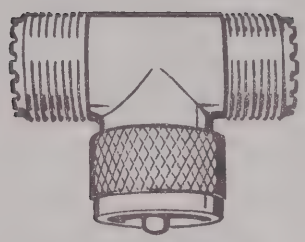
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler CU-225/U		7CAC-225590 2Z3265-225	3-3/8	34-5/16	13-3/8	25

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Directional Coupler CU-225/U (Export Packed)		9-1/4	42	18-3/4	58

ADAPTER M-358
(CONNECTOR, ADAPTER, M-358)



ADAPTER M-358

UNCTIONAL DESCRIPTION:

A portable, general purpose, T-type adapter, used in field and depot testing of adio and radar sets. It is designed to adapt sockets such as SO-239 to plugs such s PL-259.

ELATIONSHIP TO OTHER EQUIPMENT:

LECTROMECHANICAL DESCRIPTION:

ircuit Information: This adapter is a T-shaped brass tube with one round male contact and two round female contacts, with polystyrene inserts. It mounts by 5/8" - 24 external coupling threads at each female end and a knurled nut with a 5/8" - 24 internal thread on the male end. Radio frequency energy flows from the bottom of the T along the inner surface of the tube and divides into the legs equally, if the terminating impedances are equal. A minimum of energy will be

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	8850-106900	F17C-68722-3539	2Z299-358
PROCUREM'T INFO.: Navy Dwg. No. RE-49F-172			
PROCUREM'T COG.: USAF		DESIGN COG.: USAF, Rome	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12. 3. 5	

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

ADAPTER M-358
(CONNECTOR, ADAPTER, M-358)

ELECTROMECHANICAL DESCRIPTION: (Continued)

lost if the terminating impedances combined match the input impedance. This is a bilateral condition; that is, the same result will be obtained if the energy flow is in the opposite direction.

Power Supply: None.

MANUFACTURERS' OR CONTRACTORS' DATA:

The Astatic Corporation, Conneaut, Ohio; Contract No. 352-44, dated 16 October 1943; Approximate Cost per Unit, $0.80; Contract No. AF 33(600)16130, dated 29 November 1951; Approximate Cost per Unit, $0.84; Contract No. AF 33(600)16449 dated 29 November 1951; Approximate Cost per Unit, $0.91.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Adapter M-358 (Export Package - type 1/1A8 Water proof, fungus proof, etc.)	0.009	4	4	1	0.3

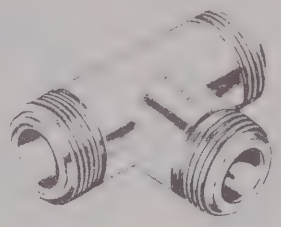
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Adapter M-358	Silver Plated Brass	8850-106900 F17C-68722-3539 2Z299-358	1-5/8	1-5/16	3/4	0.25

RADIO FREQUENCY ADAPTER UG-28A/U
(ADAPTER, CONNECTOR, UG-28A/U)

FUNCTIONAL DESCRIPTION:

A type N adapter to couple three type N plugs together.



RELATIONSHIP TO OTHER EQUIPMENT:

Similar to UG-28/U except smaller and different insert material, better cable clamping.

ELECTROMECHANICAL DESCRIPTION:

Frequency Range: Up to 3000 megacycles per second.
Maximum Voltage: 500 volts.
Maximum Power: 1000 watts.
Impedance: 50 ohms.
Temperature: High.
Weatherproof: Yes, when used with type N connectors.
Pressurized: No.
Shape: Cylindrical.
Material: Silver-plated brass.
Insert: Teflon.
Contacts: 1 round female coaxial contact (bayonet locking) at each end.
Type: Tee.
Dimensions: 1-3/4" x 1-7/32" x 5/8" diameter.
Weight: 0.156 pound.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Phenolic Corporation, Chicago 50, Illinois; Amphenol No. 82-99.

Diamond Manufacturing Corporation, Wakefield, Massachusetts, DICO No. 980.

Industrial Products Company, Danbury, Connecticut; IPC No. 44250.

Kings Electronics, Tuckahoe, New York; Kings No. KN-94-04.

The Workshop Associates, Norwood, Massachusetts.

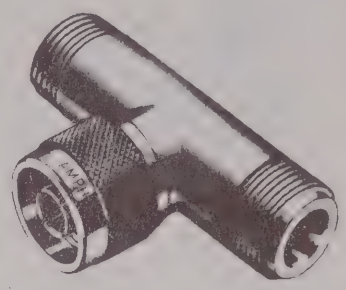
STOCK NOS: (USAF) 8850-108720, (Army) 2Z7390-28A.	
PROCUREM'T INFO: Specification MIL-C-71A. Dwg. No. RE49F465 (Navy).	
COGNIZANCE: Navy, BuShips	FUNCTIONAL CLASS. NO.: 12. 3. 5
- Electronics Test Equipment -	UG-28A/U

roject was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

RADIO FREQUENCY ADAPTER UG-107B/U
(ADAPTER, CONNECTOR UG-107B/U)

FUNCTIONAL DESCRIPTION:

A type "N" adapter to couple two RF Plugs UG-21B/U to one RF Jack UG-22B/U, or equal.



RELATIONSHIP TO OTHER EQUIPMENT:

Similar to UG-107A/U except suitable for high temperature applications, made possible by incorporating silicon rubber gaskets, and silver soldered joints.

ELECTROMECHANICAL DESCRIPTION:

Frequency Range: Up to 3000 megacycles per second.
Maximum Voltage: 500 volts.
Impedance: 50 ohms.
Temperature: High (Maximum 200°C.).
Weatherproof: Yes.
Pressurized: No.
Shape: Cylindrical.
Material: Silver-plated brass.
Insert: Teflon.
Contacts: 1 round female coaxial contact on each end of cross arm, 1 male round coaxial contact on end of stem.
Type: Tee.
Dimensions: 1-3/4" x 1-1/2" x 5/8" diameter.
Weight: 0.188 pound.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Phenolic Corporation, Chicago 50, Illinois; Amphenol No. 82-102.

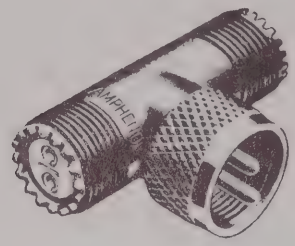
Diamond Manufacturing Corporation, Wakefield, Massachusetts; DICO No. 935.

Industrial Products Company, Danbury, Connecticut; IPC No. 7325, Navy Contract No. NObsr-42075.

Kings Electronics, Tuckahoe 7, New York; AF 33(038)23427 dated 3 April 1951; Approximate Cost per Unit, $2.12.

STOCK NOS: (USAF) 8850-108795, (SigC) 2Z7390-107B.	
PROCUREM'T INFO: Specification MIL-C-71A, Dwg. No. RE49F262 (Navy).	
COGNIZANCE: USAF, Rome	FUNCTIONAL CLASS. NO.: 12.3.5
- Electronics Test Equipment -	UG-107B/U

ADAPTER UG-196/U
(ADAPTER, CONNECTOR UG-196/U)



FUNCTIONAL DESCRIPTION:

Couples 2 RF Plugs UG-102/U (PL-284) to 1 RF Receptacle UG-103/U (SO-264).

RELATIONSHIP TO OTHER EQUIPMENT:

Used in testing AN/FPS-8 and AN/MPS-11. Similar to Adapter M-358 except for differences in fittings accommodated.

ELECTROMECHANICAL DESCRIPTION:

Frequency Range: Up to 200 megacycles per second.
Maximum Voltage: 500 volts.
Impedance: Non-constant.
Temperature: Moderate.
Weatherproof: No.
Pressurized: No.
Shape: Cylindrical.
Material: Silver-plated zinc.
Insert: Mica bakelite.
Contacts: 2 round female contacts on ends of cross arm, 1 round male contact on end of stem.
Type: Twin Tee.
Dimensions: 1-5/8" x 1-9/32" x 3/4" diameter.
Weight: 0.047 pound.

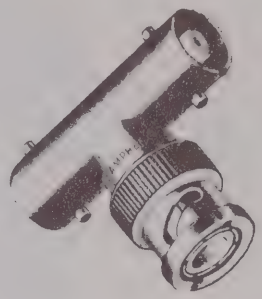
MANUFACTURERS' OR CONTRACTORS' DATA:

American Phenolic Corporation, Chicago 50, Illinois, Dwg. No. 83-22T. Contract AF 33(600)6341 dated 18 November 1951; Approximate Cost per Unit, $1.14. Amphenol No. 83-22T.

STOCK NOS: (USAF) 8850-108810, (SigC) 2Z308-196.	
PROCUREM'T INFO: Specification MIL-C-3655.	
COGNIZANCE: USAF, Rome	FUNCTIONAL CLASS. NO.: 12.3.5
- Electronics Test Equipment -	UG-196/U

342

ADAPTER UG-274A/U
(ADAPTER, CONNECTOR, UG-274A/U)



FUNCTIONAL DESCRIPTION:

Couples two RF Plugs UG-88/U to one RF Jack UG-89/U. (Adapts two BNC male to one BNC female connector.)

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Frequency Range: Up to 3000 megacycles per second.
Maximum Voltage: 500 volts.
Impedance: 50 ohms.
Temperature: Moderate.
Weatherproof: Yes.
Pressurized: No.
Shape: Cylindrical.
Material: Silver-plated brass.
Insert: Styramic.
Contacts: Each end of arm terminates in RF Jack UG-89/U and the center leg terminates in RF Plug UG-88/U.
Type: Tee.
Dimensions: 1-9/32" x 1-1/32" x 3/8" diameter.
Weight: 0.038 pound.

MANUFACTURERS' OR CONTRACTORS' DATA:

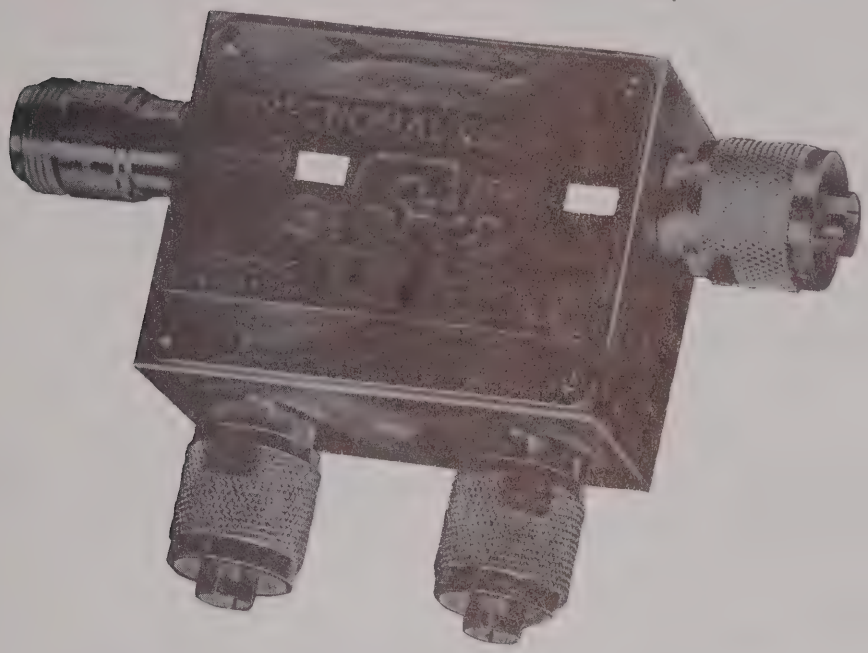
American Phenolic Corporation, Chicago 50, Illinois.
Diamond Manufacturing Corporation, Wakefield, Massachusetts.
Industrial Products Company, Danbury, Connecticut; IPC No. 88175.
Kings Electronics, Tuckahoe, New York.

STOCK NOS: (Army) 2Z308-274A.	
PROCUREM'T INFO: Dwg. SC-D-72348 (SigC).	
COGNIZANCE: USAF, Rome	FUNCTIONAL CLASS. NO.: 12. 3. 5
- Electronics Test Equipment -	UG-274A/U

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

344

COUPLER, DIRECTIONAL WIDEBAND
Part No. 137 A
(Sierra Electronic Corporation)



FUNCTIONAL DESCRIPTION:

This unit is intended to be used in conjunction with a coaxial line or with a lumped linear passive network. It makes possible various necessary transmission line measurements (within its frequency range) such as reflection coefficient, VSWR, or power in the load. It also permits loads to be matched to lines dynamically by indicating conditions providing minimization of reflected voltages.

RELATIONSHIP TO OTHER EQUIPMENT:

This coupler is identical with coupler model 137 except that the latter is designed for use with 51.5-ohm coaxial cable.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler measures the incident and reflected wave voltages by sampling the total line voltage and total line current, multiplying each by an appropriate constant, and adding the results at one terminal and subtracting at the other. This gives output voltages proportional to the incident and reflected wave voltages respectively.

Power Supply: None.

Frequency Range: 30 to 2,000 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
- Electronics Test Equipment -			Sierra 137 A

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

COUPLER, DIRECTIONAL WIDEBAND
Part No. 137 A
(Sierra Electronic Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Coupling Factor: 73 to 39 decibels.
Power Level: To 1,000 watts.
Impedance: 50.0 ohms.
Incident Wave Range: Between 70 and 2,000 megacycles per second.
Directivity: 12 decibels ±3 decibels greater than the coupling factor at each frequency.
Fittings: Type N.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sierra Electronic Corporation, San Carlos, California.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Sierra Electronic Corporation Bulletins No. 100A (Short Form Catalog) and No. 104 (Wideband Directional Couplers).

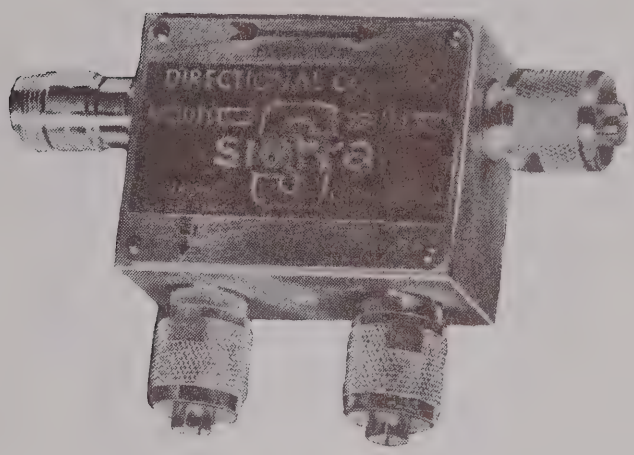
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Coupler, Directional Wideband (Sierra 137A)				5-1/2	3-1/2	

COUPLER, DIRECTIONAL WIDEBAND
Part No. 138A
(Sierra Electronic Corporation)



FUNCTIONAL DESCRIPTION:

This unit is intended to be used in conjunction with a coaxial line or with a lumped linear passive network. It makes possible various transmission line measurements (within its frequency range) such as reflection coefficient, VSWR, or power in the load. It also permits loads to be matched to lines dynamically by indicating conditions providing minimization of reflected voltages.

RELATIONSHIP TO OTHER EQUIPMENT:

This coupler is identical with coupler model 138 except that the latter is designed for use with 51.5-ohm coaxial cable.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler measures the incident and reflected wave voltages by sampling the total line voltage and total line current, multiplying each by an appropriate constant, and adding the results at one terminal and subtracting at the other. This gives output voltages proportional to the incident and reflected wave voltages respectively.

Power Supply: None.

Frequency Range: 30 to 1000 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
	- Electronics Test Equipment -		Sierra 138A

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A

COUPLER, DIRECTIONAL WIDEBAND
Part No. 138A
(Sierra Electronic Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Coupling Factor: 60 to 26 decibels.
Power Level: To 1000 watts.
Impedance: 50.0 ohms.
Incident Wave Range: Between 16 and 600 megacycles per second.
Directivity: 12 decibels ±3 decibels greater than the coupling factor at each frequency.
Fittings: Type N.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sierra Electronic Corporation, San Carlos, California.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Sierra Electronic Corporation, Bulletins No. 100A (Short Form Catalog) and No. 104 (Wideband Directional Couplers).

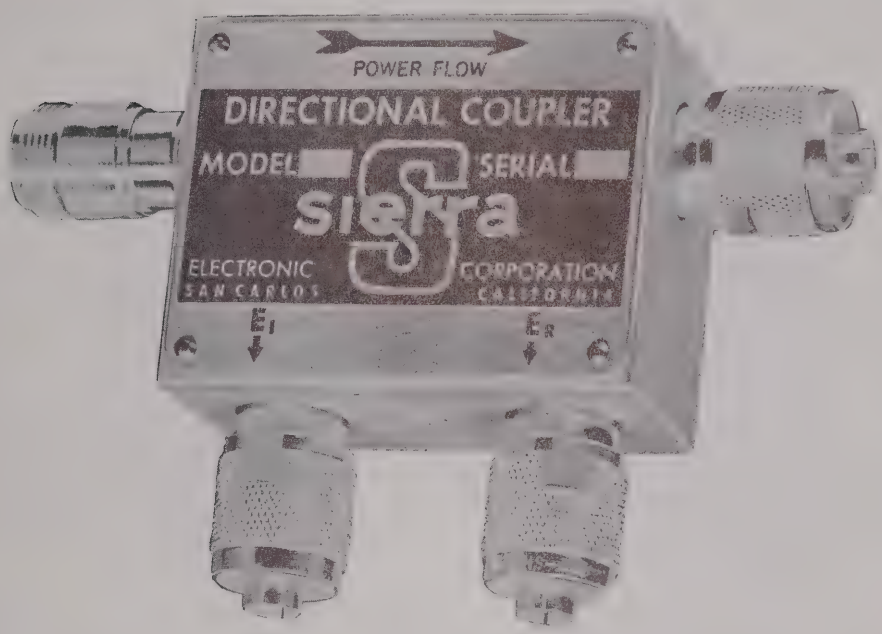
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Coupler, Directional Wideband (Sierra 138A)				5-1/2	3-1/2	

COUPLER, DIRECTIONAL WIDEBAND
Part No. 150A
(Sierra Electronic Corporation)



FUNCTIONAL DESCRIPTION:

This unit is intended to be used in conjunction with a coaxial line or with a lumped linear passive network. It mades possible various necessary transmission line measurements (within its frequency range) such as reflection coefficient, VSWR, or power in the load. It also permits loads to be matched to lines dynamically by indicating conditions providing minimization of reflected voltages.

RELATIONSHIP TO OTHER EQUIPMENT:

Physically the same as models No. 137A and No. 138A but provides for a greater coupling factor.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler measures the incident and reflected wave voltages by sampling the total line voltage and total line current, multiplying each by an appropriate constant, and adding the results at one terminal and subtracting at the other. This gives output voltages proportional to the incident and reflected wave voltages respectively.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

COUPLER, DIRECTIONAL WIDEBAND
Part No. 150A
(Sierra Electronic Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Supply: None.
Coupling Factor: 53 to 23 decibels.
Power Level: To 1000 watts.
Impedance: 50 ohms.
Incident Wave Range: Between 8 and 300 megacycles per second.
Frequency Range: 30 to 1000 megacycles per second.
Directivity: 12 decibels ±3 decibels greater than the coupling factor at each frequency.
Fittings: Type N.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sierra Electronic Corporation, San Carlos, California.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Sierra Electronic Corporation Bulletins No. 100A (Short Form Catalog) and No. 104 (Wideband Directional Couplers).

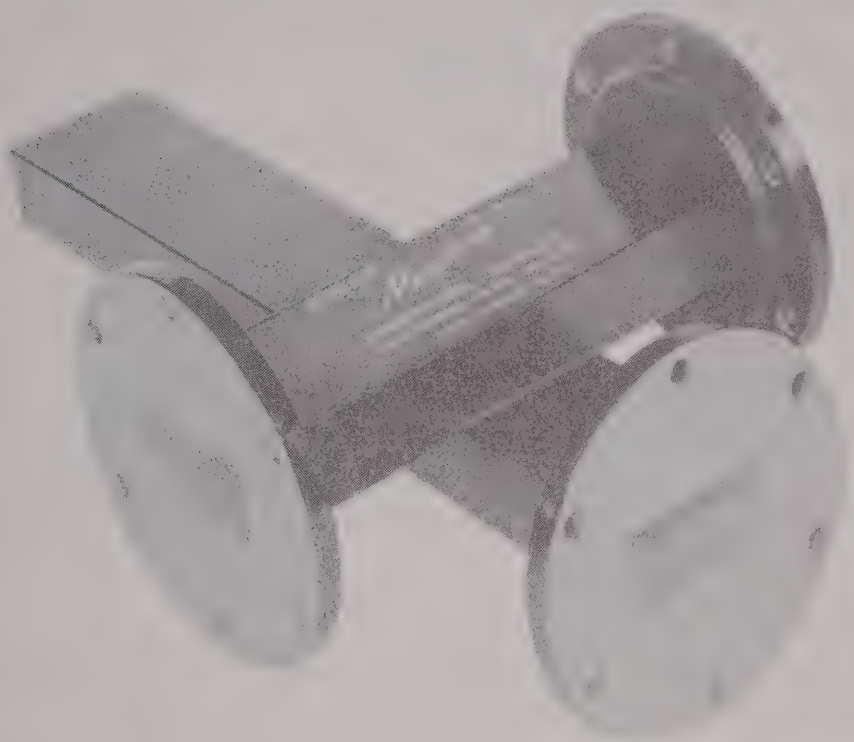
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Coupler, Directional Wideband (Sierra 150A)				5-1/2	3-1/2	

DIRECTIONAL COUPLER
MODEL NO. 209
(Sperry Gyroscope Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, cross guide directional coupler designed to operate as a one-way power monitor in waveguide transmission lines. In this capacity it is useful in the measurement and monitoring of power, decoupling of microwave instruments, reduction of power level or attenuation, measurement of voltage standing wave ratio, and measurement of receiver sensitivity. A characteristic curve of coupling versus frequency is provided with each instrument.

RELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Set AN/TRC-30.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of two rectangular waveguides joined perpendicularly to each other. Coupling is provided by slots cut in the common wall between the waveguides. Both ends of the primary and one end of the secondary guide are fitted with standard waveguide flanges. The end of the secondary guide opposite

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
	- Electronics Test Equipment -		Sperry 209

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DIRECTIONAL COUPLER
MODEL NO. 209
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

the flange is terminated by a resistance card shaped to absorb all power incident to it. Interior surfaces are finished with a high-conductivity silver plating covered by rhodium for corrosion prevention.

Power Supply: None required.

Frequency Range: 5260 to 8100 megacycles per second.

Nominal Coupling: 24 decibels.

Minimum Effective Directivity:

15 decibels from 5260 to 6700 megacycles per second.

10 decibels from 6700 to 8100 megacycles per second.

Transmission Line Rectangular Waveguide: AN Type RG-50/U, 1.5" x 0.75" x 0.064".

AN Type Connectors: UG-344/U.

Accuracy: The actual measured coupling is indicated at three points on the characteristic curve. The accuracy of calibration at these points is ±0.5 decibels. The coupling at 6700 megacycles per second does not differ by more than ±2 decibels from the nominal value. Variation in coupling over the 40% waveguide bandwidth is 3 decibels or less.

Temperature Range: -40° C. to +55° C.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Inc., Great Neck, Long Island, New York; Approximate Cost per Unit, $120.00, 25 May 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "Microline Instruments", Publication No. 23-30.

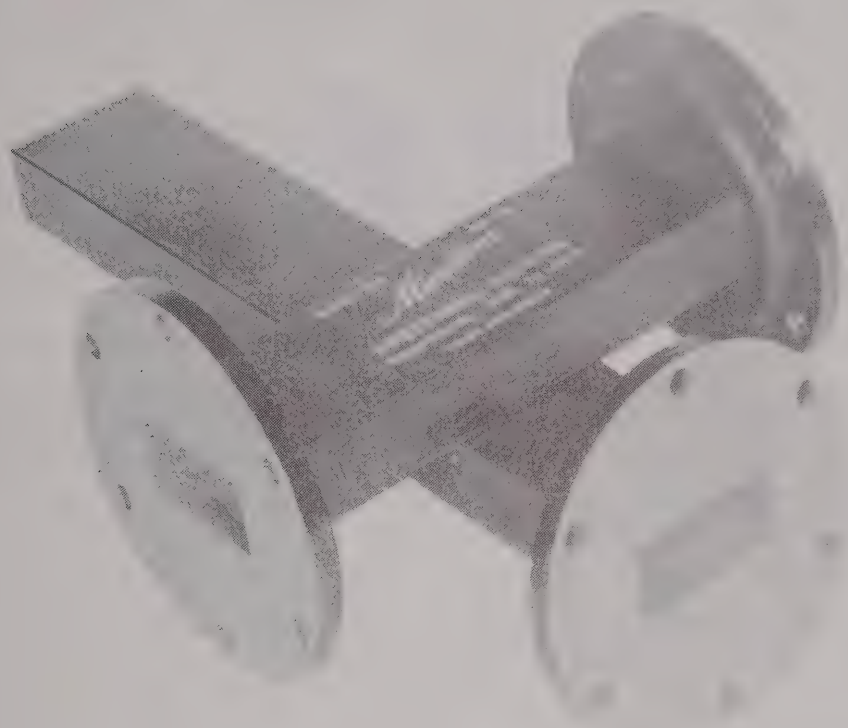
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler Model 209			3-7/8	5-1/2	8-3/4	2.5

DIRECTIONAL COUPLER
MODEL NO. 237
(Sperry Gyroscope Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, cross guide directional coupler designed to operate as a one-way power monitor in waveguide transmission lines. In this capacity it is useful in the measurement and monitoring of power, decoupling of microwave instruments, reduction of power level or attenuation, measurement of voltage standing wave ratio, and measurement of receiver sensitivity. A characteristic curve of coupling versus frequency is provided with each instrument.

RELATIONSHIP TO OTHER EQUIPMENT:

Used in testing Radio Set AN/TRC-30.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of two rectangular waveguides joined perpendicularly to each other. Coupling is provided by slots cut in the common wall between the waveguides. Both ends of the primary and one end of the secondary guide are fitted with standard waveguide flanges. The end of the secondary guide opposite the flange is terminated by a resistance card shaped to absorb all power incident

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	

is project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DIRECTIONAL COUPLER
MODEL NO. 237
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

to it. Interior surfaces are finished with a high-conductivity silverplating covered by rhodium for corrosion prevention.

Power Supply: None required.

Frequency Range: 5260 to 8100 megacycles per second.

Nominal Coupling: 30 decibels.

Minimum Effective Directivity: 20 decibels from 5260 to 6700 megacycles per second; 15 decibels from 6700 to 8100 megacycles per second.

Transmission Line Rectangular Waveguide: AN Type RG-50/U, 1.5" x 0.75" x 0.064"

AN Type Connectors: UG-344/U.

Accuracy: The actual measured coupling is indicated at three points on the characteristic curve. The accuracy of calibration at these points is ±0.5 decibels. The coupling at 6700 megacycles per second does not differ by more than ±2 decibels from the nominal value. Variation in coupling over the 40% waveguide bandwidth is 3 decibels or less.

Temperature Range: -40° C. to +55° C.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Inc., Great Neck, Long Island, New York; Approximate Cost per Unit, $120.00, 25 May 1953.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "Microline Instruments", Publication No. 23-30.

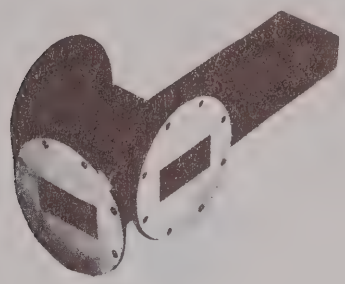
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler Model 237			3-7/8	5-1/2	8-3/4	2.5

DIRECTIONAL COUPLER
Part No. 306
(Sperry Gyroscope Company)



FUNCTIONAL DESCRIPTION:

A portable general purpose cross guide directional coupler designed to operate as a one-way power monitor in waveguide transmission lines. It is used in the measuring and monitoring of power, decoupling of microwave instruments, reduction of power level or attenuation, measurement of voltage standing wave ratio, and measurement of receiver sensitivity.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler consists of two rectangular waveguides joined perpendicularly to each other. Coupling is provided by slots cut in the common wall between the waveguides. Both ends of the primary and one end of the secondary guide are fitted with standard waveguide flanges. The end of the secondary guide opposite the flange is terminated by a resistance cord shaped to absorb all power incident to it. Interior surfaces are finished with a high-conductivity silverplating covered by rhodium for corrosion prevention.

Power Supply: None required.

Frequency Range: 2600 to 4000 megacycles per second.

Nominal Coupling: 30 decibels.

Minimum Effective Directivity: 20 decibels from 2600 to 3300 megacycles per second; 15 decibels from 3300 to 4000 megacycles per second.

Transmission Line Rectangular Waveguide: AN type RG-58U, 3" x 1-1/2" x 0.080".

AN Type Connectors: UG-214/U.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
	- Electronics Test Equipment -		Sperry Part No. 306

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

DIRECTIONAL COUPLER
Part No. 306
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy: The actual measured coupling is indicated at three points on a characteristic curve. The accuracy of the calibration at these points is ±0.5 decibel. The coupling at 3300 megacycles per second does not differ by more than ±2 decibels from the nominal value. Variation in coupling over the 40% waveguide bandwidth is 3 decibels or less.

Temperature Range: -40°C. (-40°F.) to +55°C. (+131°F.).

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company Inc., Great Neck, Long Island, New York.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "Microline Instruments", Publication No. 23-30.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler Sperry Part No. 306			7	9	16	10
1	Characteristic Curve (Coupling Versus Frequency)						

DIRECTIONAL COUPLER
Part No. 322
(Sperry Gyroscope Company)

FUNCTIONAL DESCRIPTION:

A portable general purpose cross guide directional coupler designed to operate as a one-way power monitor in waveguide transmission lines. It is used in the measuring and monitoring of power, decoupling of microwave instruments, reduction of power level or attenuation, measurement of voltage standing wave ratio, and measurement of receiver sensitivity.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The coupler consists of two rectangular waveguides joined perpendicularly to each other. Coupling is provided by slots cut in the common wall between the waveguides. Both ends of the primary and one end of the secondary guide are fitted with standard waveguide flanges. The end of the secondary guide opposite the flange is terminated by a resistance cord shaped to absorb all power incident to it. Interior surfaces are finished with a high-conductivity silverplating covered by rhodium for corrosion prevention.

Power Supply: None required.

Frequency Range: 4000 to 6000 megacycles per second.

Nominal Coupling: 40 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
	- Electronics Test Equipment -		Sperry Part No. 322

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DIRECTIONAL COUPLER
Part No. 322
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Minimum Effective Directivity: 20 decibels from 4000 to 5000 megacycles per second; 15 decibels from 5000 to 6000 megacycles per second.

Transmission Line Rectangular Waveguide: AN type RG-49U, 2" x 1" x 0.064".

AN Type Connectors: UG-149A/U.

Accuracy: The actual measured coupling is indicated at three points on a characteristic curve. The accuracy of the calibration at these points is ±0.5 decibel. The coupling at 5000 megacycles per second does not differ by more than ±2 decibels from the nominal value. Variation in coupling over the 40% waveguide bandwidth is 3 decibels or less.

Temperature Range: -40° C. (-40° F.) to +55° C. (+131° F.).

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Great Neck, Long Island, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE.

Manufacturer's Catalog "Microline Instruments." Publication 23-30.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Directional Coupler Sperry Part No. 322			4-5/8	5	8-1/2 long	5.5
1	Characteristic Curve (Coupling Versus Frequency)						

COUPLER, DIRECTIONAL COAXIAL
Part No. 467-20
(Sperry Gyroscope Company)

FUNCTIONAL DESCRIPTION:

This device is used to monitor the output of a coaxial system. The coupler also permits local-oscillator or test-signal injection into receivers. The instrument can be used in bench testing procedures or as a permanent installation in microwave systems.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Two parallel 7/8 inch coaxial lines are coupled together by means of an axial slot. The center conductors of the lines are supported by undercut beads. The directivity characteristics of the coupler is improved by compensating bars placed in the region of the slots.

Power Supply: None.

Frequency Range: 1,990 to 4,000 megacycles per second.

Main-Line Input Connector: Type UG-46/U Jack.

Main-Line Load Connector: Type UG-45/U Plug.

Secondary Line Connector: Type UG-45/U Plug, following a 90 degree bend at one end.
Terminated by a matched load at the other end.

Primary Line VSWR: Less than 1.15 for the 1990 to 4,000 megacycles per second, frequency range.

Secondary Line VSWR: Less than 1.5 for the 1990 to 4,000 megacycles per second, frequency range.

Effective Directivity: Greater than 15 decibels.

Nominal Coupling Value: 20 decibels.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.5	
- Electronics Test Equipment -			Sperry 467-20

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A

COUPLER, DIRECTIONAL COAXIAL
Part No. 467-20
(Sperry Gyroscope Company)

MANUFACTURERS' OR CONTRACTORS' DATA:
Sperry Gyroscope Company, Division of the Sperry-Rand Corporation, Great Neck, Long Island, New York; Contract No. AF (33-616)55-3207; Approximate Cost per Unit, $300.00.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Sperry Gyroscope Company, "Microline Instruments."

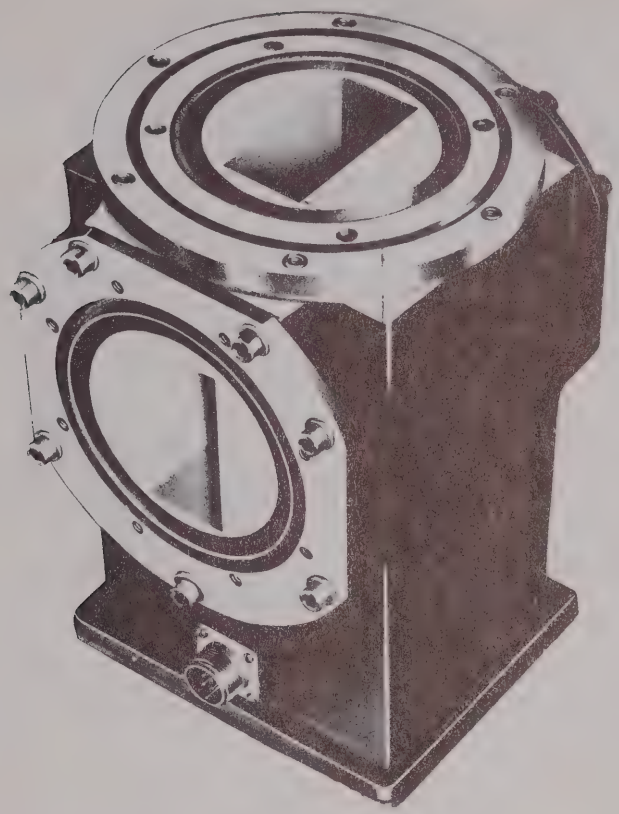
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Coupler, Directional Coaxial (Sperry No. 467-20)	0.5	13	13	5	4.75

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Coupler, Directional Coaxial (Sperry No. 467-20)			4-7/16	8-1/4	1-3/8	3

SWITCH, WAVEGUIDE SA-489/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose device used for transferring microwave energy from one input to either of two diametrically opposed outputs. The waveguide switch may be used to introduce a noise source, feed either of two radio frequency outputs into a common transmission line, or, when terminated with a dummy load, test radars or related waveguide systems without the necessity of having the radar antenna radiating.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Bogart Model S4421A.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The switch consists of two sections of RG-75/U Waveguide joined perpendicularly to each other. The input guide and both ends of the output guide are fitted with UG-585/U Waveguide Flanges. The antenna connector

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.6	
	- Electronics Test Equipment -		SA-489/U

SWITCH, WAVEGUIDE SA-489/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
is Type AN3012C-14S-2P. The instrument contains two microswitches which are driven by means of a solenoid. Internal circuitry is provided for interrupting radar high voltage during the switching interval.
Power Supply: 28 volts, DC.
Frequency Range: 2800 to 2950 megacycles per second.
Voltage Standing-Wave Ratio: Less than 1.1.
Insolation: Greater than 85 decibels.
Radio Frequency Leakage: Greater than 80 decibels down from input signal.
Radio Switching Time: Less than 0.2 second.
Pressurization: Up to 60 pounds.

MANUFACTURERS' OR CONTRACTORS' DATA:
Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Drawing D-11082; Nomenclature Card.

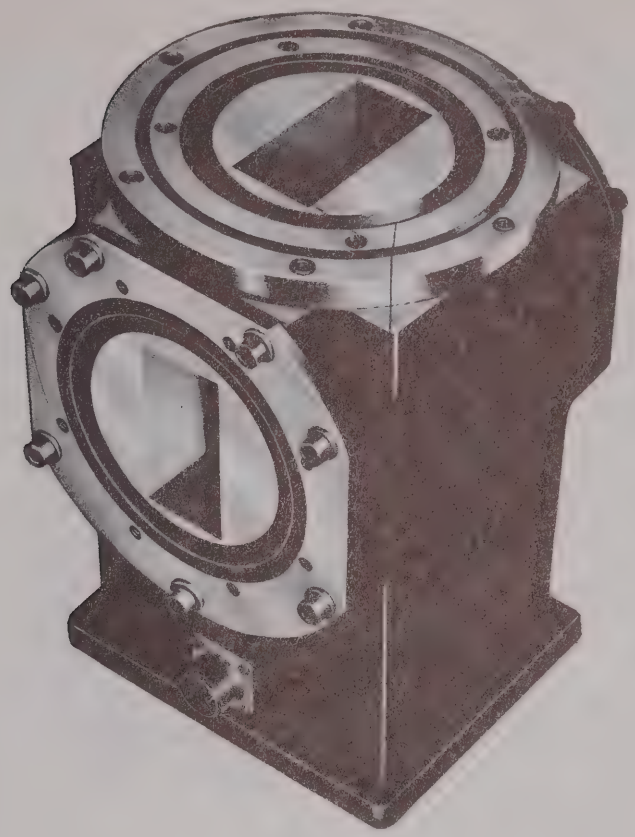
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Switch, Waveguide SA-489/U	aluminum		10-1/16	6-1/2	6-1/4	15

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Switch, Waveguide SA-489/U					

SWITCH, WAVEGUIDE SA-509/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose device used for transferring microwave energy from one input to either of two diametrically opposed outputs. The waveguide switch may be used to introduce a noise source, feed either of two radio frequency outputs into a common transmission line, or, when terminated with dummy load, test radars or related waveguide systems without the necessity of having the radar antenna radiating.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Bogart Model S4421C.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The switch consists of two sections of RG-75/U Waveguide joined perpendicularly to each other. The input guide and both ends of the output guide are fitted with UG-585/U Waveguide Flanges. The antenna connector

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy DESIGN COG.: Navy

FUNCTIONAL CLASS. NO.: 12.3.6

F.I.I.N.: SA-509/U

SWITCH, WAVEGUIDE SA-509/U

ELECTROMECHANICAL DESCRIPTION: (Continued)
is Type AN3012C-14S-2P. The instrument contains two microswitches which are driven by means of a solenoid. Internal circuitry is provided to interrupt radar high voltage during the switching interval.
Power Supply: 28 volts, DC.
Frequency Range: 3100 to 3500 megacycles per second.
Voltage Standing-Wave Ratio: Less than 1.10.
Insolation: Greater than 85 decibels.
Radio Frequency Leakage: Greater than 80 decibels down from input signal.
Radio Frequency Switching Time: Less than 0.2 second.
Pressurization: Up to 60 pounds.

MANUFACTURERS' OR CONTRACTORS' DATA:
Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:
None.

REFERENCE DATA AND LITERATURE:
Manufacturer's Drawing D-10370; Nomenclature Card.

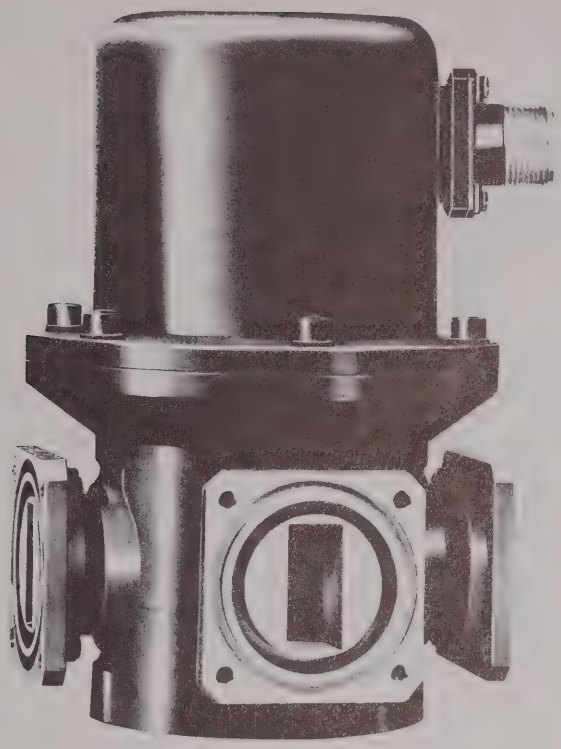
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Switch, Waveguide SA-509/U	aluminum		10-1/6	6-1/2	6-1/4	15

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Switch, Waveguide SA-509/U					

SWITCH, WAVEGUIDE SA-511/U



UNCTIONAL DESCRIPTION:

A portable, general purpose device used for transferring microwave energy rom one input to either of two diametrically opposed outputs. The waveguide witch may be used to introduce a noise source, feed either of two radio frequency utputs into a common transmission line, or, when terminated with a dummy load, est radars or related waveguide systems without the necessity of having the ra-ar antenna radiating.

ELATIONSHIP TO OTHER EQUIPMENT:

Commercial equivalent to Bogart Model X4432.

LECTROMECHANICAL DESCRIPTION:

Circuit Information: The input guide and both ends of the output guide are fitted with UG-135/U Waveguide Flanges. The antenna connector is Type AN3102C-14S-5P. The instrument contains two microswitches which are driven by means of

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy DESIGN COG.: Navy

F.I.I.N.: FUNCTIONAL CLASS. NO.: 12.3.6

SA-511/U

SWITCH, WAVEGUIDE SA-511/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

a solenoid. Internal circuitry is provided to interrupt radar high voltage during the switching interval.

Power Supply: 28 volts, DC.
Frequency Range: 8200 to 12,400 megacycles per second.
Voltage Standing-Wave Ratio: 1.10, maximum.
Insolation: 60 decibels, minimum.
Radio Frequency Leakage: Greater than 80 decibels down from input signal.
Radio Frequency Switching Time: 0.05 second.
Peak Power: 290 kilowatts, maximum.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-10355; Manufacturer's Publication 4432; Nomenclature Card.

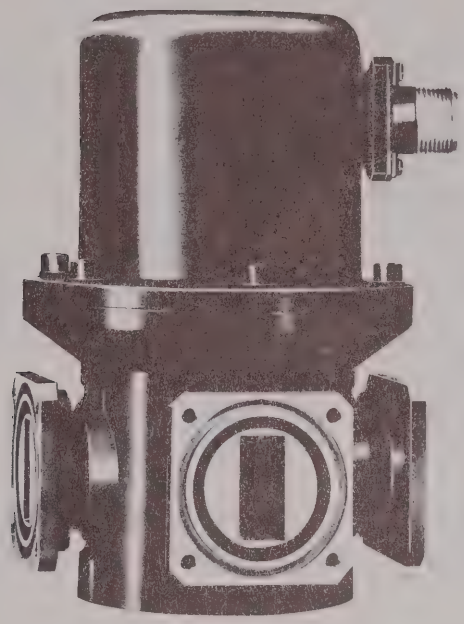
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Switch, Waveguide SA-511/U	aluminum		3-1/2	3-1/2	5-1/2	3

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Switch, Waveguide SA-511/U					

SWITCH, WAVEGUIDE SA-512/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose device used for transferring microwave energy from one input to either of two diametrically opposed outputs. The waveguide switch may be used to introduce a noise source, feed either of two radio frequency outputs into a common transmission line, or, when terminated in a dummy load, test radars or related waveguide systems without the necessity of the radar antenna radiating.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Bogart Model B4432.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The input guide and both ends of the output guide are fitted with UG-138/U Waveguide Flanges. The antenna connector is Type AN3102C-14S-5P. The instrument contains two microswitches which are driven by means of

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.6	
			SA-512/U

SWITCH, WAVEGUIDE SA-512/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

a solenoid. Internal circuitry is provided to interrupt radar high voltage during the switching interval.

Power Supply: 28 volts, DC.
Frequency Range: 7050 to 10,000 megacycles per second.
Voltage Standing-Wave Ratio: 1.10, maximum.
Insolation: 60 decibels, minimum.
Radio Frequency Switching Time: 0.05 second.
Peak Power: 460 kilowatts, maximum.

MANUFACTURERS' OR CONTRACTORS' DATA:

Bogart Manufacturing Corporation, 315 Seigel Street, Brooklyn 6, New York.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Drawing C-10358; Nomenclature Card.

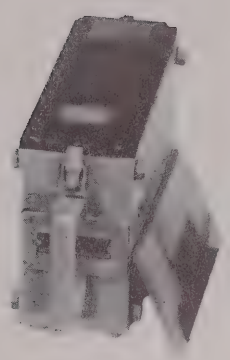
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Switch, Waveguide SA-512/U	aluminum		4-1/2	4-1/2	6	3-3/4

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Switch, Waveguide SA-512/U					

DELAY LINE MX-1381/APM-66



FUNCTIONAL DESCRIPTION:

A portable special purpose delay line which provides a rapid GO-NO-GO altitude range check. This unit is hand held against the face of a receiver-transmitter. Its two antenna horns match those of the receiver-transmitter. It couples a signal, delayed in time by a known fixed value, from the transmitter horn to the receiver horn of the receiver-transmitter. The two antenna horns of the delay line are joined electrically by a length of RF cable sufficient to provide the required delay.

RELATIONSHIP TO OTHER EQUIPMENT:

This unit is used with Radar Test Set AN/APM-66 in testing Radar Set AN/APN-22.

ELECTROMECHANICAL DESCRIPTION:

Power Supply: None.
Frequency Range: 4200 to 4400 megacycles per second.
Equivalent Unit Time Delay: 165 feet, fixed.
Accuracy of Time Delay: ±8 feet.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-269510		
PROCUREM'T INFO.:			
PROCUREM'T COG.: USN		DESIGN COG.: USN, BuAer	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.3.7	
- Electronics Test Equipment -			MX-1381/APM-66

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

DELAY LINE MX-1381/APM-66

MANUFACTURERS' OR CONTRACTORS' DATA:

Raytheon Manufacturing Company, 100 River Street, Waltham 54, Massachusetts; Raytheon Type No. 1803; USN Contract No. NOa(s)52-838.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

AN 16-30APM66-1 (Operating Instructions).
AN 16-30APM66-2 (Service Instructions).
AN 16-30APM66-3 (Overhaul Instructions).
AN 16-30APM66-4 (Illustrated Parts Breakdown).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

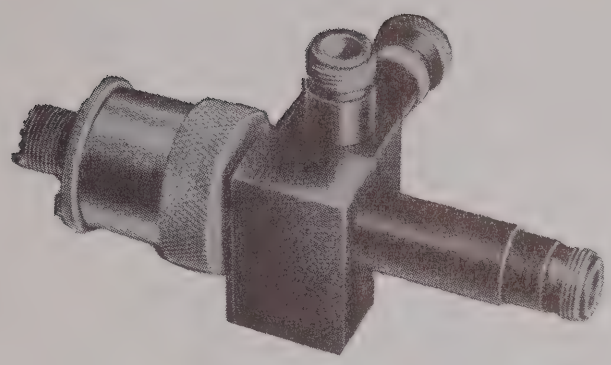
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Delay Line MX-1381/APM -66		7CAC-269510	11	26	6	17.6

12.4 PASSIVE MIXERS AND/OR MODULATORS

972

MIXER CV-52/U
(CONVERTER, FREQUENCY, ELECTRONIC, CV-52/U)



FUNCTIONAL DESCRIPTION:

This portable, general purpose, microwave instrument is a fixed tuned mixer or frequency converter that produces intermediate frequencies for IF amplifiers in receivers, spectrum analyzers, and similar equipment. It can also be used as a simple microwave detector.

RELATIONSHIP TO OTHER EQUIPMENT:

A crystal rectifier such as 1N23B is required but not supplied. Same as Sperry Model 337 Coaxial Crystal Mixer.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: As a mixer this instrument operates on the heterodyne principle. It employs a local crystal oscillator to perform this function. The detector action is a result of the rectifying property of its crystal. The mixer is composed of the main coaxial transmission line, with a type N connector for the signal input, and a branch arm, with a type N connector for the local oscillator input. The IF output connector is a coaxial UHF receptacle.

Power Supply: None.

Frequency Range: 2600 to 4000 megacycles per second.

Type of Transmission: Continuous Wave.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-224425		2C720-52

PROCUREM'T INFO.:

PROCUREM'T COG.: USAF DESIGN COG.: USAF, Rome

F.I.I.N.: FUNCTIONAL CLASS. NO.: 12.4

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

MIXER CV-52/U
(CONVERTER, FREQUENCY, ELECTRONIC, CV-52/U)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Reflection Loss: Less than 1 decibel for mixer operation.
Output Capacitance: 13 micromicrofarads.
Temperature Range: -40° C. to +55° C., operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

Sperry Gyroscope Company, Lake Success, Long Island, New York; USAF Contract Nos. W-28-099-ac-147 and AF 33(038)29010.

General Electric Company, Schenectady, New York; USAF Contract No. W-33 038-ac-16195; Approximate Cost per Unit, $200.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 16-35CV52-1 (Operating Instructions).
TO 16-35CV52-2 (Service Instructions).
TO 16-35CV52-4 (Parts List).

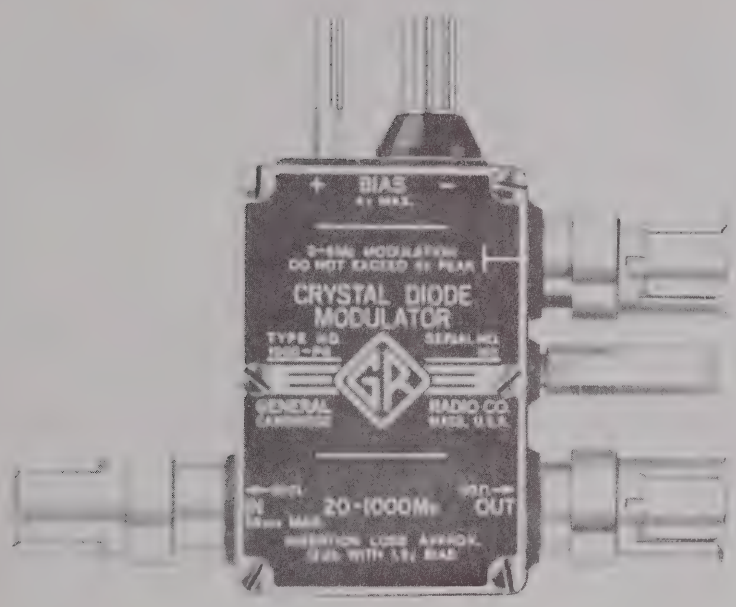
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weigh Packe (Lbs.
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Mixer CV-52/U	Silver plated alum-inum brass	7CAC-224425 2C720-52	3-1/4	2-7/16	5-7/16	1.25
1	Coaxial Line			3/8 dia.			

CRYSTAL DIODE MODULATOR
MODEL 1000-P6
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose, absorption type modulator used in conjunction with modulating source to amplitude modulate the output of an RF signal generator in the VHF-UHF carrier range. Used in applications where wide-band modulation is necessary such as television receiver testing or for radio receiving tests where incidental frequency modulation must be negligible.

RELATIONSHIP TO OTHER EQUIPMENT:

Used with Signal Generator TS-418/U to test Radio Receiving Set AN/AXR-8. The modulating source is the television camera.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Since the resistance of the crystal diode is a function of the voltage across it, this resistance can be modulated by applying a varying voltage. Inserted between an RF signal generator and its load, the unit produces amplitude modulation by variation of load impedance. An output filter prevents appreciable

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-575950		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 12.4	
	- Electronics Test Equipment -		Model 1000-P6

project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

CRYSTAL DIODE MODULATOR
MODEL 1000-P6
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

modulating voltage from appearing at the output.

Power Supply: 1.5 volt battery for fixed bias or a 3 volt battery and a 10,000 ohm rheostat for adjustable bias (not supplied).

Carrier Frequency Range: 20 to 1000 megacycles per second.

Modulating Frequency Range: 0 to 5 megacycles per second.

Impedance: Designed for use with a 50 ohm source and a 50 ohm load. The impedance at the modulation terminals is approximately 600 ohms.

Modulation:

RF Input: 50 millivolts maximum (30% modulation).

Maximum Bias: 4 volts.

Insertion Loss: Approximately 12 decibels with 1.5 volt bias. Approximately 0.2 volts root mean square at the modulation terminals will produce 30% modulation.

Maximum percentage modulation at 1000 megacycles per second: 30%.

Peak Modulation Voltage: 4 volts maximum.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Massachusetts; Approximate Cost per Unit, $40.00; October 1951.

TUBE COMPLEMENT:

1 JAN-1N21B (Crystal Diode).

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog "M" October 1951.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Crystal Diode Modulator Model 1000-P6		7CAC-575950	4	5	1-1/16	1
1	Plug, Type 274-MB (Gen. Radio)	Black Polystyrene		1-11/16	1-15/16		

377

ELECTRICAL & ELECTRONIC

TEST EQUIPMENT DATA HANDBOOK

VOLUME 13

STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

13

FREDERICK RESEARCH CORPORATION
2601 UNIVERSITY BOULEVARD, WEST
WHEATON, MARYLAND

375

ELECTRICAL & ELECTRONIC

TEST EQUIPMENT DATA HANDBOOK

VOLUME 13

STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

13

FREDERICK RESEARCH CORPORATION
2601 UNIVERSITY BOULEVARD, WEST
WHEATON, MARYLAND

ELECTRONICS TEST EQUIPMENT FUNCTIONAL CLASSIFICATION

STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

13.1 Calibration Equipment for Current and Voltage Measuring Equipment

13.2 Frequency Meter Calibrator

13.3 Calibration Equipment for Waveform Measuring Equipment

13.4 Calibration Equipment for Signal Generating Equipment

13.5 Calibration Equipment for Field Intensity Measuring Equipment

13.6 Calibration Equipment for Impedance Measuring Equipment

13.7 Calibration Equipment for Active Networks

13.8 Calibration Equipment for Time Measuring and Counting Equipment

13.9 Calibration Equipment for Nuclear Energy Measuring Equipment

13.10 Calibration Equipment for Multifunction Test and Support Equipment

13.11 Calibration Equipment for Associated Devices for Electronics Test Equipment

13.12 Calibration Equipment for Passive Networks

13.13 Calibration Equipment for Power Measuring Equipment

13.14 Calibration Equipment for Temperature Measuring Devices

13.15 Calibration Equipment for Stress, Strain, and Flaw Detecting and Measuring Equipment

13.16 Calibration Equipment for Gas and/or Liquid Measuring Devices

13.17 Calibration Equipment for Kinematic Test and Measuring Equipment

13.18 Calibration Equipment for Optical Testing, Measuring, and Aligning Equipment

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION - DEFINITIONS

13. STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

Equipment designed to calibrate other support or test equipment for the purpose of increasing the accuracy of, or establishing a standard for this equipment.

13.1 CALIBRATION EQUIPMENT FOR CURRENT AND VOLTAGE MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating current and voltage measuring equipment.

13.2 FREQUENCY METER CALIBRATOR

An equipment specifically designed for use in calibrating a frequency measuring device.

13.3 CALIBRATION EQUIPMENT FOR WAVEFORM MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating waveform measuring equipment.

13.4 CALIBRATION EQUIPMENT FOR SIGNAL GENERATING EQUIPMENT

An equipment specifically designed for use in calibrating signal generating equipment.

13.5 CALIBRATION EQUIPMENT FOR FIELD INTENSITY MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating field intensity measuring equipment.

13.6 CALIBRATION EQUIPMENT FOR IMPEDANCE MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating impedance measuring equipment.

13.7 CALIBRATION EQUIPMENT FOR ACTIVE NETWORKS

An equipment specifically designed for use in calibrating active networks.

ELECTRONICS TEST EQUIPMENT
FUNCTIONAL CLASSIFICATION - DEFINITIONS

13.8 CALIBRATION EQUIPMENT FOR TIME MEASURING AND COUNTING EQUIPMENT

An equipment specifically designed for use in calibrating time measuring and counting equipment.

13.9 CALIBRATION EQUIPMENT FOR NUCLEAR ENERGY MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating nuclear energy measuring equipment.

13.10 CALIBRATION EQUIPMENT FOR MULTIFUNCTION TEST AND SUPPORT EQUIPMENT

An equipment specifically designed for use in calibrating multifunction test and support equipment.

13.11 CALIBRATION EQUIPMENT FOR ASSOCIATED DEVICES FOR ELECTRONICS TEST EQUIPMENT

An equipment specifically designed for use in the calibration of associated devices for electronics test equipment.

13.12 CALIBRATION EQUIPMENT FOR PASSIVE NETWORKS

An equipment specifically designed for use in calibrating passive networks.

13.13 CALIBRATION EQUIPMENT FOR POWER MEASURING EQUIPME

An equipment specifically designed for use in calibrating power measuring equipment.

13.14 CALIBRATION EQUIPMENT FOR TEMPERATURE MEASURING DEVICES

Equipment specifically designed to calibrate temperature measuring devices.

13.15 CALIBRATION EQUIPMENT FOR STRESS, STRAIN, AND FLAW DETECTING AND MEASURING EQUIPMENT

Equipment specifically designed to calibrate stress, strain, and flaw detecting and measuring equipment.

13.16 CALIBRATION EQUIPMENT FOR GAS AND/OR LIQUID MEASURING DEVICES

An equipment specifically designed for use in calibrating gas and/or liquid measuring devices.

13.17 CALIBRATION EQUIPMENT FOR KINEMATIC TEST AND MEASURING EQUIPMENT

An equipment specifically designed for use in calibrating kinematic test and measuring devices.

13.18 CALIBRATION EQUIPMENT FOR OPTICAL TESTING, MEASURING, AND ALIGNING EQUIPMENT

An equipment specifically designed for use in calibrating optical testing, measuring, and aligning equipment.

TABLE OF CONTENTS

Functional Classification	Designation	Name	
13.	STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT		
13. 1	CALIBRATION EQUIPMENT FOR CURRENT AND VOLTAGE MEASURING EQUIPMENT		
13. 1	TS-336/GSM-1	Magnet Charger	395
13. 1	TS-656(XC)/U	Meter Tester	397
13. 1	TS-682/GSM-1	Meter Test Set	399
13. 1	TS-689/U	Meter Test Set	403
13. 1	TS-690/U	Meter Test Set	407
13. 1	TS-691/U	Meter Test Set	411
13. 1	Leeds and Northrup 7308	Cell, Standard	415
13. 1	Weston 4 Type 3	Standard Cell	417
13. 2	FREQUENCY METER CALIBRATORS		
13. 2	AN/URM-18	Frequency Calibrator-Meter Set	421
13. 2	TS-39/TSM-1	Standard Oscillator	425
13. 2	TS-65A/FMQ-1	Frequency Standard	427
13. 2	TS-65C/FMQ-1	Frequency Standard	429
13. 2	American Time 2001-2	Frequency Standard	431
13. 2	American Time 2005	Frequency Standard	433
13. 4	CALIBRATION EQUIPMENT FOR SIGNAL GENERATING EQUIPMENT		
13. 4	AN/FRM-3	Frequency Calibrator Set	437
13. 4	Presto 100	Microwave Secondary Frequency Standard	443
13. 4	Sperry T-101005	Range Calibrator	445

TABLE OF CONTENTS (Continued)

Functional Classification	Designation	Name
13.8	CALIBRATION EQUIPMENT FOR TIME MEASURING AND COUNTING EQUIPMENT	
13.8	TS-810/U	Crystal Calibrator 447
13.10	CALIBRATION EQUIPMENT FOR MULTIFUNCTION TEST AND SUPPORT EQUIPMENT	
13.10	Maxson 901	Precision Phasemeter 555
13.11	CALIBRATION EQUIPMENT FOR ASSOCIATED DEVICES FOR ELECTRONICS TEST EQUIPMENT	
13.11	MB PC1	Vibration Pickup Calibrat 561
13.13	CALIBRATION EQUIPMENT FOR POWER MEASURING EQUIPMENT	
13.13	Weinschel BA-5	Attenuation Calibrator 565
13.14	CALIBRATION EQUIPMENT FOR TEMPERATURE MEASURING DEVICES	
13.14	Leeds and Northrup 9003	Checking Furnace 571
13.14	Lewis 81T26A	Electrical Thermometer Tester 573
13.16	CALIBRATION EQUIPMENT FOR GAS AND/OR LIQUID MEASURING DEVICES	
13.16	General Radio MD-1	Fuel Quantity Gage Teste 579
13.16	General Radio P-582	Capacitance Bridge 583
13.17	CALIBRATION EQUIPMENT FOR KINEMATIC TEST AND MEASURING EQUIPMENT	
13.17	General Mills TSY-7133	Gear Box, Master 589

ALPHA-NUMERICAL INDEX

Designation	Name	Functional Classification
AN/FRM-3	Frequency Calibrator Set	13.4
AN/URM-18	Frequency Calibrator-Meter Set	13.2
TS-39/TSM-1	Standard Oscillator	13.2
TS-65A/FMQ-1	Frequency Standard	13.2
TS-65C/FMQ-1	Frequency Standard	13.2
TS-336/GSM-1	Magnet Charger	13.1
TS-656(XC)/U	Meter Tester	13.1
TS-682/GSM-1	Meter Test Set	13.1
TS-689/U	Meter Test Set	13.1
TS-690/U	Meter Test Set	13.1
TS-691/U	Meter Test Set	13.1
TS-810/U	Crystal Calibrator	13.8
American Time 2001-2	Frequency Standard	13.2
American Time 2005	Frequency Standard	13.2
General Mills TSY-7133	Gear Box, Master	13.17
General Radio MD-1	Fuel Quantity Gage Tester	13.16
General Radio P-582	Capacitance Bridge	13.16
Leeds and Northrup 7308	Cell, Standard	13.1
Leeds and Northrup 9003	Checking Furnace	13.14
Lewis 81T26A	Electrical Thermometer Tester	13.14
Maxson 901	Precision Phasemeter	13.10
MB PC1	Vibration Pickup Calibrator	13.11
Presto 100	Microwave Secondary Frequency Standard	13.4
Sperry T-101005	Range Calibrator	13.4
Weinschel BA-5	Attenuation Calibrator	13.13
Weston 4 Type 3	Standard Cell	13.1

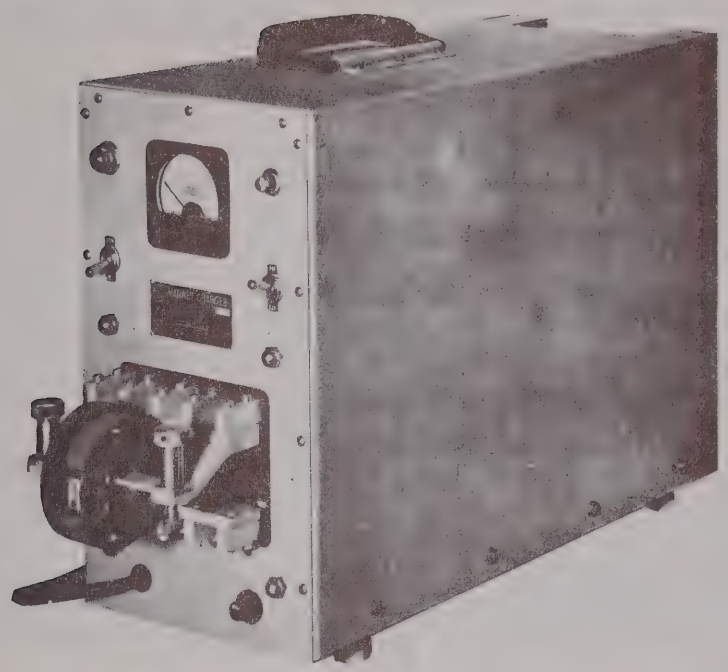
390

13. STANDARDS AND CALIBRATION EQUIPMENT FOR TEST AND MEASURING EQUIPMENT

982

13.1 CALIBRATION EQUIPMENT FOR CURRENT AND VOLTAGE MEASURING EQUIPMENT

MAGNET CHARGER TS-336/GSM-1



FUNCTIONAL DESCRIPTION:

A general purpose instrument designed to charge the permanent-magnet of electrical indicating instruments such as voltmeters and ammeters. The voltage charge on internal charging capacitors is indicated on a voltmeter located on the front panel.

RELATIONSHIP TO OTHER EQUIPMENT:

The TS-336/GSM-1 is the same as Radio Frequency Laboratories Magnet Charger Model 107A.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment is a capacitor discharge impulse-type flux generator capable of magnetizing most meter magnets to saturation. The instrument consists essentially of a power supply, two 50 microfarad capacitors,

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.:	Commercial
F.I.I.N.:		FUNCTIONAL CLASS. NO.:	13.1

MAGNET CHARGER TS-336/GSM-1

ELECTROMECHANICAL DESCRIPTION: (Continued)

a current transformer and an ignitron tube. The equipment functions by charging the two capacitors to either 400 or 600 volts DC, as determined by positioning a switch to either the Low or High position. The capacitors provide the charging current by being discharged through the current transformer. The current transformer secondary transfers the charging flux to the magnet being treated by means of a charging bar which is located on the front of the instrument. The discharge current is controlled by a pushbutton-operated ignitron. Provisions are incorporated for connections to wire-wound charging fixtures, a capacitor boost unit and a controlled demagnetizer.

Power Supply: 110 to 120 volts, AC, 60 cycles per second, 15 watts.
Charging Ranges: 12,000 and 24,000 ampere-turns.
Meter Range: 0 to 600 volts, DC, 0 to 1.0 milliamps.

MANUFACTURERS' OR CONTRACTORS' DATA:

Radio Frequency Laboratories, Incorporated, Boonton, New Jersey; Approximate Cost per Unit, $530.00.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:

Manufacturer's Instruction Manual MA-1563.

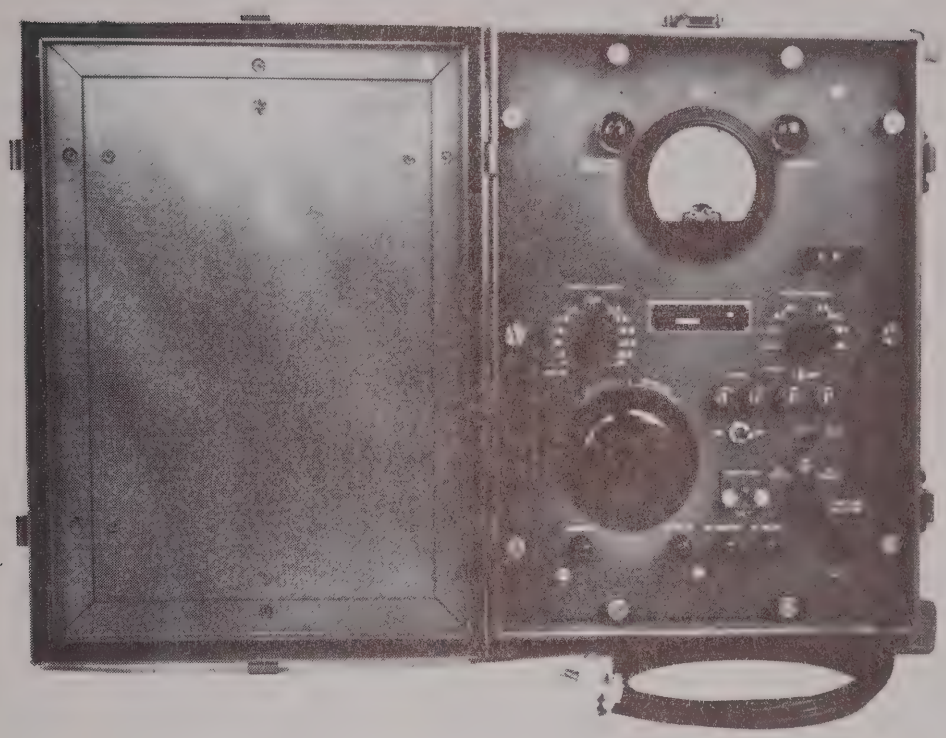
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Magnet Charger TS-336/GSM-1	metal		12	7	17	75

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Magnet Charger TS-336/GSM-1					

METER TESTER TS-656(XC)/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose, ruggedized, simple "go-no-go" tester used to test the majority of existing voltmeters and ammeters. Selector switches, a control knob for a variable transformer, and a precision meter for measuring AC and DC voltage and DC current are mounted on the front panel. Provision is made to connect the meter under test to the tester so readings can be compared on all required ranges within the capabilities of the tester. This meter tester is intended for use at all maintenance echelons.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The AC input is adjusted to the desired value by a variable transformer, whose output feeds the primary of a power transformer. For DC meter supply, part of the secondary voltage is rectified and filtered. The AC

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:	Army tentative Spec. (SigC) SCL-1180 dated 17 March 1948		
PROCUREM'T COG.:	Army	DESIGN COG.: Army, CSL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.1	
	- Electronics Test Equipment -		TS-656(XC)/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

METER TESTER TS-656(XC)/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

meter supply is merely tapped off the secondary at specified points. The necessary circuitry is included to switch the self-contained meter from voltage to current measurement, when operating on DC. The output of the power circuit is compensated so that when the self-contained meter and the meter under test are supplied with the test voltage or current, both will receive the same quantity regardless of differences in sensitivity or input resistance.

Power Supply: 115 or 230 volts, AC, 50 to 1600 cycles per second, single phase.
Voltage Ranges: AC and DC, 0 to 2, 4, 10, 20, 40, 100, 200, 400 volts.
Current Ranges: DC, 0 to 100, 200, 400 microamperes; 0 to 1, 2, 4, 10, 20, 40, 100, 200, 400 milliamperes; 0 to 1 ampere.
Accuracy: AC, ±5%; DC, ±2%.
Meter Movement: D'Arsonval, 4-1/2 inch, round.
Meter Sensitivity: 1000 microamperes ±2%.
Meter Resistance: 3000 ohms, ±10%.
Temperature Range: -40° C. to +55° C., operational; -54° C. to +70° C., non-operational.
Humidity Range: Up to 100% at ambient temperatures.
Altitude Range: Up to 10,000 feet, operational.

MANUFACTURERS' OR CONTRACTORS' DATA:

ARF Products, River Forest, Illinois; Army Contract No. W-36-039-sc-38242.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

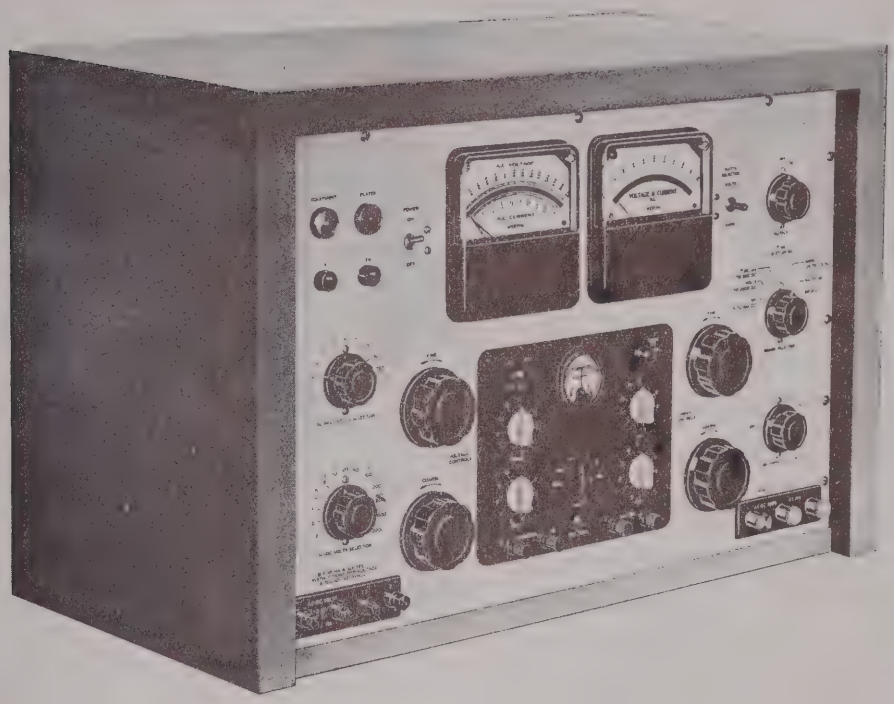
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Meter Tester TS-656(XC)/U	Aluminum		18-1/2	12-1/2	13-5/8	60

METER TEST SET TS-682/GSM-1



FUNCTIONAL DESCRIPTION:

A general purpose equipment used to calibrate electrical measuring instruments. The instrument may be used to calibrate alternating and direct current voltmeters, ammeters, milliammeters, micorammeters and direct current wattmeters. The instrument may also be used to measure shunts or multipliers. Test results are indicated on meters located on the front panel and by the use of calibration charts included with the equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Radio Frequency Laboratories, Incorporated, AC-DC Instrument Calibration Standard, Model 829.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The instrument is essentially a source of variable direct and alternating voltages with accurate indications of voltage and current output and

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:	Spec WA 71-1689-A		
PROCUREM'T COG.:	Navy	DESIGN COG.: Commercial	
F.I.L.N.:		FUNCTIONAL CLASS. NO.: 13.1	
	- Electronics Test Equipment -		TS-682/GSM-1

METER TEST SET TS-682/GSM-1

ELECTROMECHANICAL DESCRIPTION: (Continued)

a Wheatstone bridge. The voltage and current controls are comprised of autotransformers for fine and coarse adjustments. Two voltage and current meters are located on the front panel. One meter indicates alternating voltage and current and the other indicates direct voltage and current. Both indicators are provided with knife-edge pointers and a scale mirror thus reducing paralax error. The indicators can be read to one-tenth of a scale division. The built-in Wheatstone bridge is provided with a zero center scale mircoammeter, used to indicate bridge balance, four decade resistors and a ratio control. The equipment incorporates a safety feature to protect the instrument from overload during tests by disabling the supply voltages when any control switch is changed. Wattmeters may be calibrated using test set DC power.

Power Supply: 115 volts ±10%, AC, 50 to 400 cycles per second.

Alternating Voltage Ranges:

Volts Full Scale	Maximum Current	Volts Full Scale	Maximum Current
0.0015	5.0 microamps	3.0	2.0 amps
0.003	5.0 microamps	7.5	1.0 amp
0.0075	5.0 microamps	15	0.5 amp
0.015	5.0 microamps	30	0.2 amp
0.03	5.0 microamps	75	0.15 amp
0.075	5.0 microamps	150	0.09 amp
0.15	5.0 microamps	300	0.08 amp
0.3	5.0 microamps	750	0.02 amp
0.75	5.0 microamps	1500	0.02 amp
1.5	3.0 amps		

Direct Voltage Ranges:

Volts Full Scale	Maximum Current	Volts Full Scale	Maximum Current
0.00025	0.00013 amp	1.0	0.025 amp
0.0005	0.0003 amp	2.0	0.025 amp
0.001	0.0005 amp	5.0	0.025 amp
0.0025	0.0013 amp	10	0.025 amp
0.005	0.0025 amp	20	0.02 amp
0.01	0.005 amp	50	0.015 amp
0.025	0.013 amp	100	0.015 amp
0.05	0.025 amp	200	0.015 amp
0.1	0.05 amp	500	0.015 amp
0.2	0.03 amp	1000	0.01 amp
0.5	0.03 amp	2000	0.005 amp

(Continued)

METER TEST SET TS-682/GSM-1

ELECTROMECHANICAL DESCRIPTION: (Continued)

Alternating Current Ranges:

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Power Load
0.0015 amp	10,000 ohms	0.05 amp	1.0 volt-amp
0.003 amp	10,000 ohms	0.1 amp	2.0 volt-amps
0.0075 amp	10,000 ohms	0.2 amp	2.0 volt-amps
0.015 amp	10,000 ohms	0.5 amp	2.0 volt-amps
0.03 amp	10,000 ohms	1.0 amp	5.0 volt-amps
		2.0 amps	10 volt-amps
		5.0 amps	15 volt-amps
		10 amps	40 volt-amps
		20 amps	40 volt-amps

Direct Current Ranges:

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Power Load
2.0 microamps	10,000 ohms	0.05 amp	0.2 volt-amp
5.0 microamps	10,000 ohms	0.1 amp	0.5 volt-amp
10 microamps	10,000 ohms	0.2 amp	1.0 volt-amp
20 microamps	10,000 ohms	0.5 amp	2.0 volt-amps
50 microamps	10,000 ohms	1.0 amp	4.0 volt-amps
100 microamps	10,000 ohms	2.0 amps	7.0 volt-amps
200 microamps	10,000 ohms	5.0 amps	15 volt-amps
500 microamps	10,000 ohms	10 amps	45 volt-amps
1.0 milliamp	10,000 ohms	20 amps	50 volt-amps
2.0 milliamps	10,000 ohms		
5.0 milliamps	10,000 ohms		
10 milliamps	10,000 ohms		
20 milliamps	10,000 ohms		

Resistance Range: 1 ohm to 1 megohm in four decades.
Accuracy: Voltage and current, ±0.5% with use of calibration charts; Wheatstone bridge, ±0.5% from 1 to 10 and 100,000 ohms to 1 megohm and ±0.25% from 10 to 100,000 ohms.
Null Meter: 100 to 0 to 100 microamps.

MANUFACTURERS' OR CONTRACTORS' DATA:

Radio Frequency Laboratories, Incorporated, Boonton, New Jersey; Approximate Cost per Unit, $2650.00.

METER TEST SET TS-682/GSM-1

TUBE COMPLEMENT:
1 836.

REFERENCE DATA AND LITERATURE:
Manufacturers' Instruction Manual HA-6640.

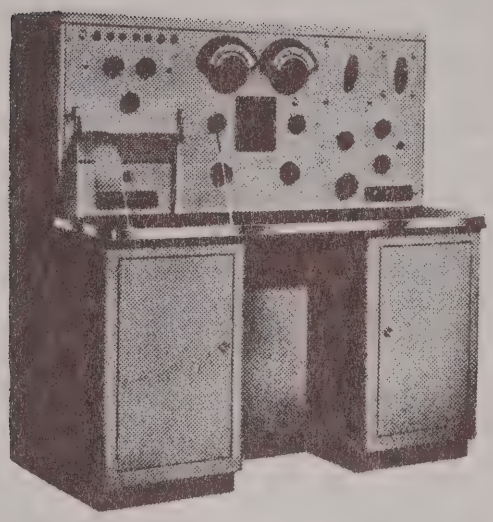
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Meter Test Set TS-682/GSM-1	metal		21-1/2	33-1/4	16-1/2	150

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Meter Test Set TS-682/GSM-1					

METER TEST SET TS-689/U



FUNCTIONAL DESCRIPTION:

A general purpose equipment used to calibrate direct current voltmeters, ammeters and wattmeters. Alternating current wattmeters may be calibrated using the direct current method. Variable standard voltages and currents are provided to enable wide ranges of meter calibration. Test results are indicated by meters and controls located on the front panel of the equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The test set is comprised of two main sections, the voltage calibrator and the current calibrator. Both sections may be used simultaneously since the voltage and current sections operate independently. The voltage section consists of a rectifier circuit with a tapped secondary which provides the test voltage ranges, two autotransformers providing means for adjusting the calibration voltage within each range, a resistance voltage divider

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy, BuAer	
F.I.I.N.: 6625-669-4591		FUNCTIONAL CLASS. NO.: 13.1	
- Electronics Test Equipment -		TS-689/U	

METER TEST SET TS-689/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

for the low voltage outputs, a polarity reverse switch and a standard voltage indicator. The current section consists of a self-contained storage battery, a battery charger, variable dropping resistors, standard shunts, a polarity reverse switch and a standard current indicator. Safety features include resistance in the current circuits to prevent overloading the standard meter or the meter under test, interlock switches that disable the supply voltage if the test range is changed without the input voltage being set to zero by means of the autotransformers. Operator protection is provided by a transparent hood which covers the meter under test. Lifting the hood actuates an interlock switch which disables test voltages above 150 volts.

Power Supply: 105 to 125 volts, AC, 50 to 1600 cycles per second, 350 watts; three 2.0 volts, DC, 168 amp-hour batteries.

Direct Voltage Ranges:

Volts Full Scale	Maximum Resistance of Instrument Calibrated	Maximum Current	Maximum Power Load
75 millivolts	0.75 ohm	0.1 amp	0.0075 watt
150 millivolts	1.5 ohm	0.1 amp	0.015 watt
300 millivolts	3.0 ohms	0.1 amp	0.03 watt
750 millivolts	7.5 ohms	0.1 amp	0.075 watt
1.5 volt	15 ohms	0.1 amp	0.15 watt
3.0 volts	30 ohms	0.1 amp	0.3 watt
7.5 volts	75 ohms	0.1 amp	0.75 watt
15 volts	150 ohms	0.1 amp	1.5 watt
30 volts	300 ohms	0.1 amp	3 watts
75 volts	750 ohms	0.1 amp	7.5 watts
150 volts	1500 ohms	0.1 amp	15 watts
300 volts	3600 ohms	0.083 amp	25 watts
750 volts	9400 ohms	0.080 amp	60 watts
1500 volts	30,000 ohms	0.050 amp	75 watts

Direct Current Ranges:

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Resistance of Instrument Calibrated	Maximum Power Load
75 microamps	11000 ohms	0.030 amp	120 ohms	0.112 watt
150 microamps	11000 ohms	0.075 amp	50 ohms	0.3 watt
300 microamps	11000 ohms	0.15 amp	22 ohms	0.6 watt
750 microamps	11000 ohms	0.3 amp	15 ohms	1.4 watt
1.5 milliamp	11000 ohms	0.75 amp	4.8 ohms	2.75 watts
3.0 milliamps	11000 ohms	1.5 amp	2.2 ohms	5 watts

(Continued)

METER TEST SET TS-689/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Direct Current Ranges: (Continued)

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Resistance of Instrument Calibrated	Maximum Power Load
7.5 milliamps	11000 ohms	3 amps	1.3 ohm	12 watts
15 milliamps	11000 ohms	7.5 amps	0.35 ohm	20 watts
		15 amps	0.17 ohm	30 watts
		30 amps	0.03 ohm	30 watts
		75 amps	0.02 ohm	106 watts
		150 amps	0.0075 ohm	170 watts

Measurement Accuracy: ±0.5%.

Standard Ammeter: 0 to 7.5 milliamps, 150 scale divisions, accuracy ±0.5% full scale.

Standard Voltmeter: 0 to 75 millivolts, 150 scale divisions, accuracy ±0.5% full scale.

MANUFACTURERS' OR CONTRACTORS' DATA:

Radio Frequency Laboratories, Boonton, New Jersey.

TUBE COMPLEMENT:

4 836, 1 FTR233B2HX1, 1 FTR34D4829.

REFERENCE DATA AND LITERATURE:

AN 16-35TS689-3 (Maintenance Instructions).

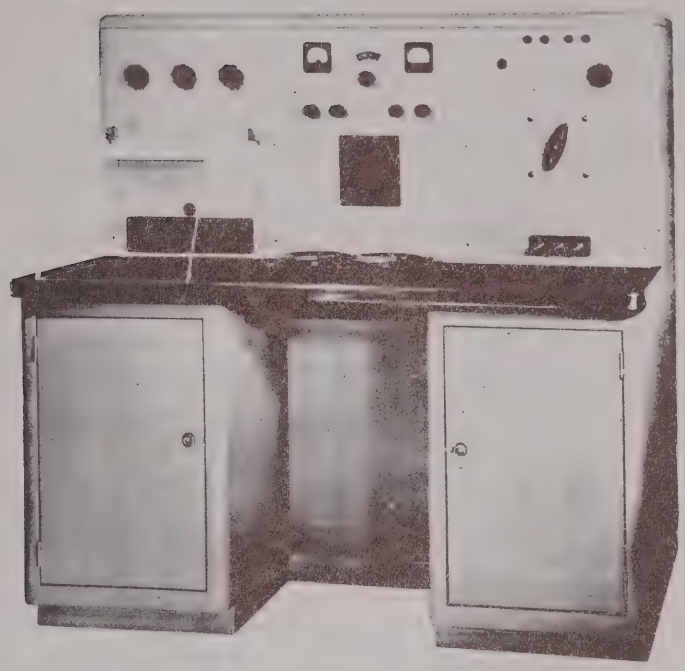
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches) H	W	D	Weight (Lbs.)
1	Meter Test Set TS-689/U	metal		59	60-1/2	32	975

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches) H	W	D	Weight Packed (Lbs.)
	Meter Test Set TS-689/U					

METER TEST SET TS-690/U



FUNCTIONAL DESCRIPTION:

A general purpose equipment designed for safe, accurate calibration of AC voltmeters, ammeters, and milliammeters.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to the Radio Frequency Laboratories 261B.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The meter test set consists of a variable frequency electronic power oscillator, a multi-tapped transformer, a current transfromer, a standard AC voltmeter, a standard AC ammeter, and various controls and terminals to set up test circuits. The meters are calibrated by appling a standard voltage or current simultaneously to the standard meter and the meter being calibrated. The instruments under test are protected against overload by means of interlocks. Operator protection is provided by means of a removable, transparent plastic hood for all voltages above 150 volts. Internal heaters are

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Navy	
F.I.I.N.: 5800-C03-2867		FUNCTIONAL CLASS. NO.: 13.1	

METER TEST SET TS-690/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

provided to guard against moisture condensation in humid climates.

Power Supply: 115 volts ±2%, AC, 50 to 1600 cycles per second, single phase, 750 watts maximum.

Voltage Calibration Ranges:

Voltage, Full Scale	Minimum Resistance	Current	Burden
75 millivolts	0.29 ohm	0.26 amp	0.02 volt-amp
150 millivolts	0.58 ohm	0.26 amp	0.04 volt-amp
300 millivolts	1.20 ohm	0.26 amp	0.08 volt-amp
750 millivolts	5.75 ohms	0.13 amp	0.10 volt-amp
1.5 volt	0.7 ohm	2.00 amps	3.0 volt-amps
3.0 volts	1.8 ohm	1.60 amp	5.0 volt-amps
7.5 volts	11.0 ohms	0.66 amp	5.0 volt-amps
15 volts	30.0 ohms	0.50 amp	7.5 volt-amps
30 volts	90.0 ohms	0.33 amp	10.0 volt-amps
75 volts	100.0 ohms	0.80 amp	60.0 volt-amps
150 volts	1500.0 ohms	0.10 amp	15.0 volt-amps
300 volts	5000.0 ohms	0.06 amp	20.0 volt-amps
750 volts	22000.0 ohms	0.033 amp	25.0 volt-amps
1500 volts	44000.0 ohms	0.033 amp	50.0 volt-amps

Current Calibration Ranges:

Voltage, Full Scale	Maximum Resistance	Burden
1.5 milliamp	10000 ohms	
3.0 milliamps	10000 ohms	
7.5 milliamps	10000 ohms	
15.0 milliamps	10000 ohms	
30.0 milliamps	10000 ohms	
75 milliamps	120 ohms	0.6 volt-amp
150 milliamps	50 ohms	1.2 volt-amp
300 milliamps	30 ohms	2.4 volt-amps
750 milliamps	10 ohms	6.0 volt-amps
1 amp	2.0 ohms	2 volt-amps
2 amps	1.0 ohm	4 volt-amps
5 amps	0.3 ohm	8 volt-amps
10 amps	0.15 ohm	15 volt-amps
20 amps	0.037 ohm	15 volt-amps
50 amps	0.006 ohm	15 volt-amps
100 amps	0.002 ohm	20 volt-amps
200 amps	0.0006 ohm	25 volt-amps

(Continued)

METER TEST SET TS-690/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Accuracy of Calibration: ±0.25% full scale.

Output Power: 115 volts, AC and 300 watts; 70 volts, AC and 300 watts, resistive load at frequencies between 50 and 1600 cycles per second.

Frequency Range (Continuously Variable):
40 to 270 cycles per second.
270 to 1600 cycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

Radio Frequency Laboratories, Incorporated, Boonton, New Jersey.

TUBE COMPLEMENT:

1 5U4G, 2 6B46, 1 6F6, 4 6L6, 1 6SL7, 1 6SL7GT, 1 6SN7GT, 4 811, 2 866A, 2 VR-105-30.

REFERENCE DATA AND LITERATURE:

AN 16-35TS690-3 Handbook of Maintenance Instructions.

EQUIPMENT SUPPLIED:

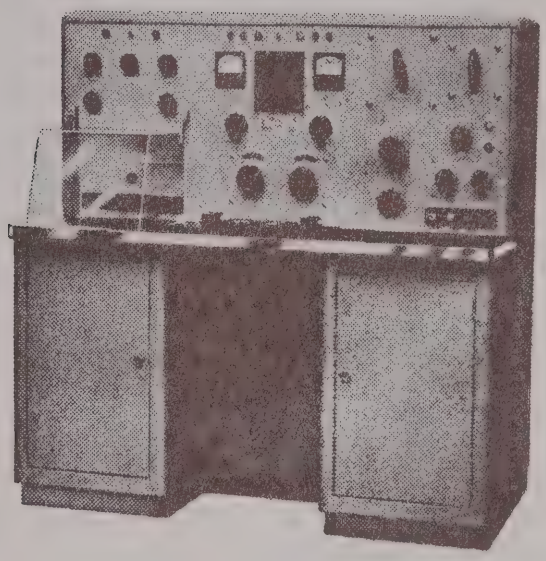
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Meter Test Set TS-690/U	Steel	(USN) F17-T-3381-1001	60-1/2	59	32	900

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Meter Test Set TS-690/U					

410

METER TEST SET TS-691/U



FUNCTIONAL DESCRIPTION:

A general purpose equipment used to calibrate direct current voltmeters, ammeters and wattmeters. Alternating current wattmeters may be calibrated using the direct current method. Variable standard voltages and currents are provided to enable wide ranges of meter calibration. Test results are indicated by meters and controls located on the front panel of the equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The test set is comprised of two main sections, the voltage calibrator and the current calibrator. Both sections may be used simultaneously since the voltage and current sections operate independently. The voltage section consists of a full wave power supply with a tapped secondary power transformer which provides the test voltage ranges, two autotransformers providing means for adjusting the calibration voltage within each range, voltage

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.		(ASO)R16AN-TS691U	

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy

DESIGN COG.: Navy, BuAer

F.I.I.N.: 6625-519-1693

FUNCTIONAL CLASS. NO.: 13.1

METER TEST SET TS-691/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

dividers, meter circuits to indicate the test voltage, a polarity reverse switch, and an accurate potentiometer used in conjunction with a galvonometer to obtain the standard test voltages. The galvonometer uses a standard cell as a reference voltage. The current section is comprised of a battery power supply, a battery charger, variable dropping resistors, standard shunts, a monitoring meter, and a potentiometer circuit in conjunction with a galvonometer to obtain the standard current. Safety features include resistance in the current circuits to prevent overloading the standard meter or meter under test, and interlock switches that disable the supply voltage when the range switch is changed without the input voltage being set to zero by means of the autotransformers. Operator protection is provided by a transparent hood which covers the meter under test. Lifting the hood actuates an interlock switch which disables test voltages above 150 volts.

Power Supply: 105 to 125 volts, AC, 50 to 1600 cycles per second, 350 watts; three 2.0 volts, DC, 168 amp-hour batteries.

Direct Voltage Ranges:

Volts Full Scale	Minimum Resistance Of Instrument Calibrated	Maximum Current	Maximum Power Load
75 millivolts	0.75 ohm	0.1 amp	0.0075 watt
150 millivolts	1.5 ohm	0.1 amp	0.015 watt
300 millivolts	3.0 ohms	0.1 amp	0.03 watt
750 millivolts	7.5 ohms	0.1 amp	0.075 watt
1.5 volt	15 ohms	0.1 amp	0.15 watt
3 volts	30 ohms	0.1 amp	0.3 watt
7.5 volts	75 ohms	0.1 amp	0.75 watt
15 volts	150 ohms	0.1 amp	1.5 watt
30 volts	300 ohms	0.1 amp	3 watts
75 volts	750 ohms	0.1 amp	7.5 watts
150 volts	1500 ohms	0.1 amp	15 watts
300 volts	3600 ohms	0.083 amp	25 watts
750 volts	9400 ohms	0.080 amp	60 watts
1500 volts	30000 ohms	0.05 amp	75 watts

Direct Current Ranges:

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Resistance of Instrument Calibrated	Maximum Power Load
75 microamps	11110 ohms	0.03 amp	120 ohms	0.112 watt
150 microamps	11110 ohms	0.075 amp	50 ohms	0.3 watt

(Continued)

METER TEST SET TS-691/U

ELECTROMECHANICAL DESCRIPTION: (Continued)

Direct Current Ranges: (Continued)

Current Full Scale	Maximum Resistance of Instrument Calibrated	Current Full Scale	Maximum Resistance of Instrument Calibrated	Maximum Power Load
300 microamps	11110 ohms	0.15 amp	22 ohms	0.6 watts
750 microamps	11110 ohms	0.3 amp	15 ohms	1.4 watts
1.5 milliamps	10000 ohms	0.75 amp	4.8 ohms	2.75 watts
3 milliamps	10000 ohms	1.5 amp	2.2 ohms	5 watts
7.5 milliamps	10000 ohms	3 amps	1.3 ohm	12 watts
15 milliamps	10000 ohms	7.5 amps	0.35 ohm	20 watts
		15 amps	0.17 ohm	30 watts
		30 amps	0.03 ohm	30 watts
		75 amps	0.02 ohm	160 watts
		150 amps	0.0075 ohm	170 watts

Measurement Accuracy: ±0.1%
Standard Ammeter: 0 to 0.15 volts, DC, accuracy ±0.02%.
Standard Voltmeter: 0 to 0.15 volts, DC, accuracy ±0.02%.

MANUFACTURERS' OR CONTRACTORS' DATA:

Radio Frequency Laboratories, Incorporated, Boonton, New Jersey.

TUBE COMPLEMENT:

4 836.

REFERENCE DATA AND LITERATURE:

AN 16-35TS691-3 (Maintenance Instructions).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Meter Test Set TS-691/U					

METER TEST SET TS-691/U

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Meter Test Set TS-691/U	metal		59	60-1/2	32	1050

CELL, STANDARD
Model 7308
(Leeds and Northrop Company)

FUNCTIONAL DESCRIPTION:

A general purpose laboratory voltage standard of the unsaturated cadmium type. The cell is commonly used as a voltage reference in conjunction with a high precision null potentiometer. It may be used in any null balanced type circuit in which a small current is reduced to zero by the balancing operation. This cell is designed to be used for very short periods of time and should be so arranged in a test circuit that it is used only momentarily as a reference.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to Model 7309 and Model 7310 except that the latter of these two is less precise.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: A hermetically sealed, glass receptacle in the form of the letter "H", contains the active elements of the cell. This receptacle is mounted in a copper lined, molded plastic case. Two binding posts marked to indicate polarity are provided for terminal connections.

Power Supply: None required.

Electromotive Force: 1.01884 to 1.01964 absolute volts at 20°C. (68°F.).

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-179300		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.1	
- Electronics Test Equipment - Leeds & Northrup 7308			

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

CELL, STANDARD
Model 7308
(Leeds and Northrup Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Operating Temperature: +4°C. (39°F.) to +40°C. (104°F.).
Accuracy: ±0.01% of certified value.

MANUFACTURERS' OR CONTRACTORS' DATA:
Leeds and Northrup Company, 4970 Stenton Avenue, Philadelphia, Pennsylvania; Approximate Cost per Unit, $30.00.

REFERENCE DATA AND LITERATURE:
Leeds and Northrup Data Sheet #EB5(1).
Leeds and Northrup Catalog "E."

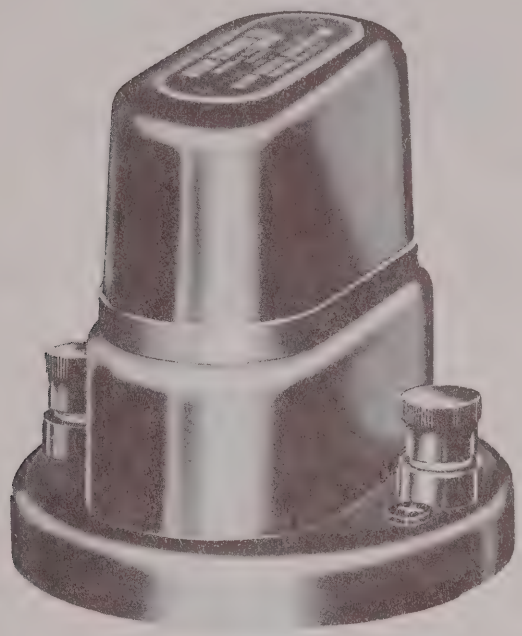
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Cell, Standard (Leeds & Northrup 7308)	Plastic	7CAC-179300	5-3/16	4-1/8	4	2

STANDARD CELL
Model 4 Type 3
(Weston Electrical Instruments Corporation)



FUNCTIONAL DESCRIPTION:

A general purpose, laboratory, voltage standard of the unsaturated cadmium type. This cell is commonly used as a voltage reference in conjunction with a potentiometer. It may also be used in any null balanced type circuit in which a very small current is reduced to zero by the balancing operation. This cell is designed to be used for very short periods of time and should be so arranged in a test circuit that it is used only momentarily as a reference. The cell is portable but is subject to severe shock if not handled carefully. After handling, the cell should be allowed to recover its rated emf before being used for test purposes.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Physical Characteristics: An hermetically sealed, glass receptacle, in the form of the letter "H" contains the active elements of the cell. This receptacle is mounted in a heavy, copper, thermal equalizing shield which is housed in bakelite. The bakelite housing is provided with two binding posts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-178600		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.1	
	- Electronics Test Equipment - Weston Model 4 Type 3		

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

STANDARD CELL
Model 4 Type 3
(Weston Electrical Instruments Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Electromotive Force: 1.0188 to 1.0198 absolute volts.
Internal Resistance: 100 to 200 ohms.
Temperature Coefficient: Negligible.
Operating Temperature: +4°C. (+34°F.) to +40°C. (+54°F.).
Maximum Current: 100 microamperes.
Accuracy: ±0.01%.

MANUFACTURERS' OR CONTRACTORS' DATA:
Weston Electrical Instruments Corporation, Newark 5, New Jersey; Approximate Cost per Unit, $45.00.

REFERENCE DATA AND LITERATURE:
Weston Electrical Instruments Circular A-26-A, January 1950.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

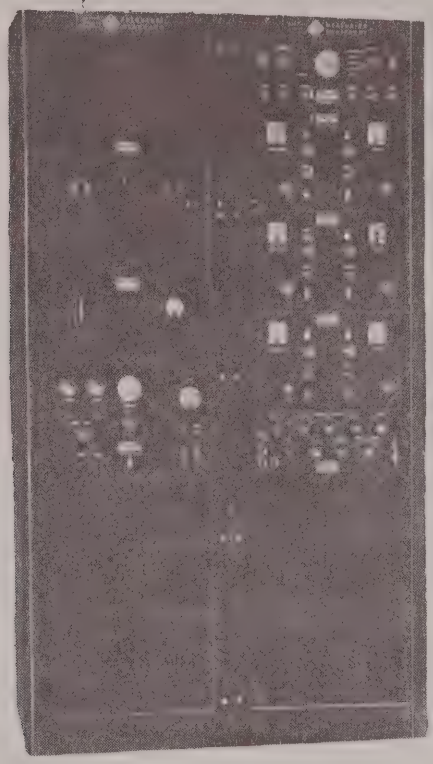
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Standard Cell Weston Model 4 Type 3	Bake-lite	7CAC-178600	3-4/10	4-1/2 dia.		2

13.2 FREQUENCY METER CALIBRATORS

420

FREQUENCY CALIBRATOR-METER SET AN/URM-18



FUNCTIONAL DESCRIPTION:

A stationary, general purpose equipment, used in depot and laboratory testing as a complete secondary frequency standard. It is used in measuring the frequencies of radio transmitters and receivers, for frequency monitoring, and for calibrating other frequency measuring equipment. All the components are mounted in two enclosed cabinet type, floor mounted, relay racks, one of which contains a speaker for audible monitoring of beat notes.

RELATIONSHIP TO OTHER EQUIPMENT:

This equipment is identical to General Radio Secondary Frequency Standard Type 1100 AQ and General Radio Frequency Measuring Equipment Type 1105A combined.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The frequency portion of the equipment consists of a crystal-controlled, bridge type, piezo-electric oscillator circuit, a series of four multivibrators, and a self-contained power supply. The frequency measuring portion

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:	Army	DESIGN COG.: Army, SSL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
- Electronics Test Equipment -			AN/URM-18

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A

FREQUENCY CALIBRATOR-METER SET AN/URM-18

ELECTROMECHANICAL DESCRIPTION: (Continued)

consists of a direct-reading audio interpolation oscillator, a mixer circuit and beat indicator, three frequency transfer units each containing a heterodyne frequency meter and a heterodyne detector, a coupling panel containing switching and level adjustments, and a comparison oscilloscope which includes selection, smoothing and phase shifting networks for its circular sweeps and its own power supply.

Power Supply: 105 to 125 volts, or 210 to 250 volts, AC, single phase, 50 to 60 cycles per second, 355 watts.

Frequency Range: 100 kilocycles per second to 100 megacycles per second.

Frequency Standard:

Fundamental Crystal Frequency: 100 kilocycles per second, accurate to within 1 part in 10 million in terms of standard time.

Multivibrator Frequencies: 100, 10, 1 and 0.1 kilocycles per second.

Temperature Stability in Temperature Control Unit: Within 0.01° C. for all ordinary ambient temperatures.

Output Voltages:	At 100 kilocycles per second:	0.2 volt, rms, across 65 ohms.
	At 10 kilocycles per second:	0.2 volts, rms, across 65 ohms. 20 volts, rms, across 10,000 ohms.
	At 1 kilocycle per second:	25 volts, rms, across 10,000 ohms.
	At 0.1 kilocycle per second:	20 volts, rms, across 10,000 ohms.

Frequency Measuring Equipment:

Frequency Ranges of Frequency Transfer Units: 100 to 2000 kilocycles per second, 1 to 10 megacycles per second, 10 to 100 megacycles per second.

Frequency Range of Interpolation Oscillator: 0 to 5000 cycles per second.

Comparison Oscilloscope Signal Control Network Frequencies: At line frequency, 0.1, 1 and 10 kilocycles per second and at a variable frequency obtained from the interpolation oscillator.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Cambridge, Mass.; Approximate Cost per Unit, $6,200.00.

TUBE COMPLEMENT:

1 JAN-6AC7, 2 JAN-6J5, 1 JAN-5R4GY, 2 JAN-6X5G, 1 JAN-6K6GT, 2 JAN-6H6, 1 JAN-9001, 2 JAN-9002, 1 JAN-6X5GT, 2 JAN-2X2/879, 1 JAN-3DP1A, 3 JAN-OD3/VR150, 4 JAN-6J5GT, 1 type 2-LAP-430, 7 JAN-6SJ7, 16 JAN-6SN7GT.

REFERENCE DATA AND LITERATURE

FREQUENCY CALIBRATOR-METER SET AN/URM-18

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Frequency Calibrator-Meter Set AN/URM-18 Including:	Metal		76-1/8	44	20-1/2	670
1	Frequency Calibrator Group OA-165/URM-18 which consists of: Frequency Calibrator FR-46/URM-18 Multivibrator-Power Supply O-122/URM-18 Rack MT-746/U	Metal		43	22	15-1/4	300
1	Frequency Meter Group OA-166/URM-18 which consists of: Frequency Meter FR-43/URM-18 Frequency Meter FR-44/URM-18	Metal		76-1/8	22	20-1/2	370

(Continued)

FREQUENCY CALIBRATOR-METER SET AN/URM-18

EQUIPMENT SUPPLIED: (Continued)

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
	Frequency Meter FR-45/URM-18 AF Signal Generator SG-42/URM-18 Control Panel SB-105/URM-18 Oscilloscope OS-16/URM-18 Rack MT-747/U						

STANDARD OSCILLATOR TS-39/TSM-1
(CALIBRATOR, FREQUENCY, TS-39/TSM-1)

FUNCTIONAL DESCRIPTION:

A reference oscillator when testing crystal units in standard crystal test sets. For use in specifying activity and frequency requirements of crystal units, and correlating production and testing equipment.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Power Supply: 110 to 120 volts AC, 50 to 1720 cycles per second.

Frequency Range: 0.5 to 30 megacycles per second in 6 bands: 0.5 to 0.9, 0.85 to 2.0, 1.8 to 4.1, 3.6 to 8.6, 6.0 to 15.0, 13.0 to 30.0 megacycles per second.

Power Output: 3.25 watts uncalibrated.

MANUFACTURERS' OR CONTRACTORS' DATA:

Western Electric Company, 120 Broadway, New York, New York; Type No. D-151740; Western Electric Dwg. No. D-151288; Approximate Cost per Unit, $198.00.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	1600-326749200	N16-RT-75219	3F3577-39
PROCUREM'T INFO.: Spec. No. 71-3172 (Army), Dwg. No. SC-D-3351			
PROCUREM'T COG.: Army		DESIGN COG.: Army, SSL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
- Electronics Test Equipment -			TS-39/TSM-1

his project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

STANDARD OSCILLATOR TS-39/TSM-1
(CALIBRATOR, FREQUENCY, TS-39/TSM-1)

TUBE COMPLEMENT:
1 JAN-5T4, 1 JAN-OC3/VR-105, 1 JAN-6C5.

REFERENCE DATA AND LITERATURE:
Army Technical Manual TM 11-2606.

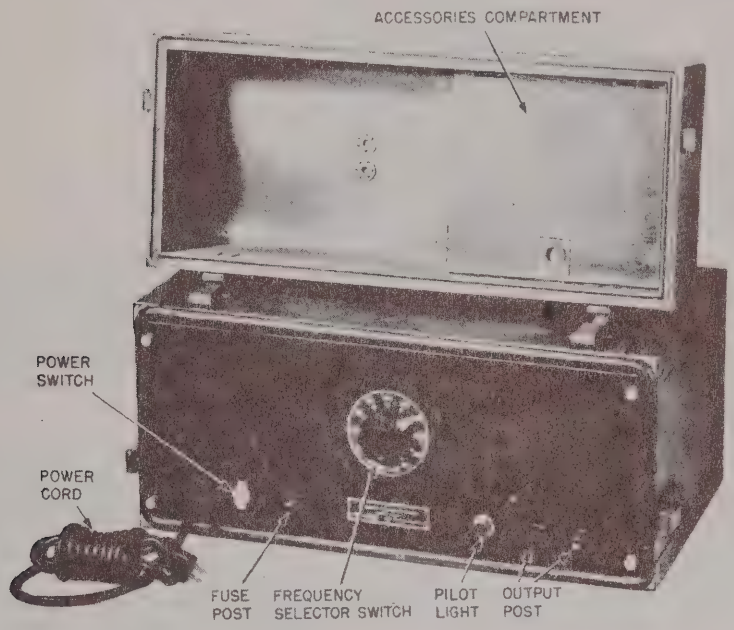
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Standard Oscillator TS-39/TSM-1 (Shelf-Package)	1.32	9	19-1/5	13	35

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Standard Oscillator TS-39/TSM-1		1600-326749200 N16-RT-75219 3F3577-39	7	19	10	24.56
6	AN Inductors: TN-5/TSM-1 TN-59/TSM-1 TN-60/TSM-1 TN-61/TSM-1 TN-62/TSM-1 TN-63/TSM-1						
4	Adapters: UG-1/TSM-1 UG-3/TSM-1 UG-76/TSM-1 UG-77/TSM-1						
1	Coupling Unit CU-75/TSM-1						
1	Instruction Book						
1	RF Pick-up Cord						
1	Calibration Chart						

FREQUENCY STANDARD TS-65A/FMQ-1
(CALIBRATOR, FREQUENCY, TS-65A/FMQ-1)



FUNCTIONAL DESCRIPTION:

A portable, special purpose, test instrument used to align and calibrate Frequency Meter TS-29/FMQ-1 and Radiosonde Recorder RD-3/FMQ-1 which are components of Radiosonde Receptor AN/FMQ-1. It generates standard audio frequencies by means of electrically driven tuning forks. The desired frequency is selected by a rotary switch.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to American Time Products Model SC-16.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Consists of three electrically driven tuning forks capable of producing frequencies of 700, 720, and 760 cycles per second. Each of the tuning forks controls a resistance-capacitance multivibrator tuned to a submultiple of the tuning fork frequency. The forks are temperature compensated and pressure sealed.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Limited Standard		
STOCK NOS.	2600-701892862		7A889-65A
PROCUREM'T INFO.: Army Spec. 2055, Army Spec. 74-73			
PROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
- Electronics Test Equipment -			TS-65A/FMQ-1

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FREQUENCY STANDARD TS-65A/FMQ-1
(CALIBRATOR, FREQUENCY, TS-65A/FMQ-1)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: 115 volts AC, 50 to 60 cycles per second, single phase, 40 watts.

Frequency Range: 10, 20, 40, 60, 80, 100, 120, 140, 160, 180, and 190 cycles per second.

Output Voltage: Minimum of 30 volts at any frequency.

Accuracy: 0.005%.

Temperature Range: 0° C. to $+40^{\circ}$ C.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Time Products, Inc., New York 19, New York; Order No. 1195-DAY-44.

TUBE COMPLEMENT:

5 JAN-6SN7, 3 JAN-6SL7, 1 JAN-OD3, 1 JAN-6X5.

REFERENCE DATA AND LITERATURE:

TM 11-2602A (TO 16-35TS65-7) (Instruction Book).

TO 16-55-418 (Spare Parts List).

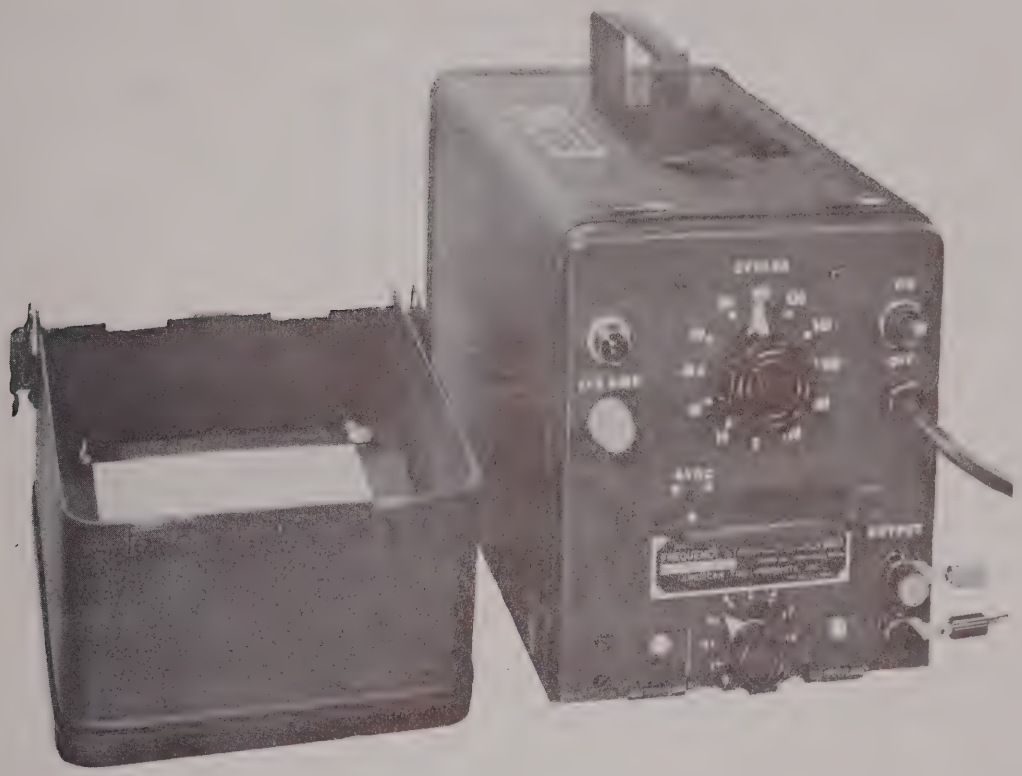
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Frequency Standard TS-65A/FMQ-1 (Export Packed)	5.4	14-3/8	27-7/8	22-7/8	110

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Frequency Standard TS-65A/FMQ-1 Including:		2600-701892862 7A889-65A				40
1	Chest CY-193/FMQ-1	Metal bound wood		8	19	15	
1	Cord CS-268/FMQ-1						
1	Kit, Spare Parts						

FREQUENCY STANDARD TS-65C/FMQ-1
(CALIBRATOR, FREQUENCY, TS-65C/FMQ-1)



FUNCTIONAL DESCRIPTION:

A portable, special purpose, low audio requency generator, used to align and calibrate Frequency Meter TS-29/FMQ-1 and Radiosonde Recorder RD-3/FMQ-1 which are components of Radiosonde Receptor AN/FMQ-1. The desired frequency is selected by a rotary switch.

RELATIONSHIP TO OTHER EQUIPMENT:

The TS-65C/FMQ-1 is physically and electrically different from the previous models.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: A tuning fork oscillator controls the basic frequency accuracy and stability. A photoelectric system and a light blanking disk turned by a synchronous motor driven from voltage derived from the tuning fork is used to generate eleven fixed frequencies.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-170265-96513		7A889-65C
PROCUREM'T INFO.:			
PROCUREM'T COG.: Army		DESIGN COG.: Army, ESL	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
- Electronics Test Equipment -			TS-65C/FMQ-1

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FREQUENCY STANDARD TS-65C/FMQ-1
(CALIBRATOR, FREQUENCY, TS-65C/FMQ-1)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: 110 to 135 volts, AC, 50 to 65 cycles per second, single phase, 35 watts.

Frequency Range: 10, 20, 40, 60, 80, 100, 120, 140, 160, 180, 190, cycles per second.

Output Voltage: Variable, maximum equals 45 ±15 volts peak.

Output Waveshape: Negative going pulse.

Output Impedance: 50,000 ohms maximum.

Output Loading: 250,000 ohms minimum.

Accuracy: ±0.05% overall.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Time Products, Incorporated, New York 19, New York; Order No. 21488-PHILA-50-04.

TUBE COMPLEMENT:

1 JAN-2D21, 1 JAN-6AQ5, 1 JAN-6X4, 1 JAN-12AT7, 1 JAN-12AX7, 1 JAN-OB2.

REFERENCE DATA AND LITERATURE:

TM 11-2062B (TO 16-35TS65-8) (Instruction Book).

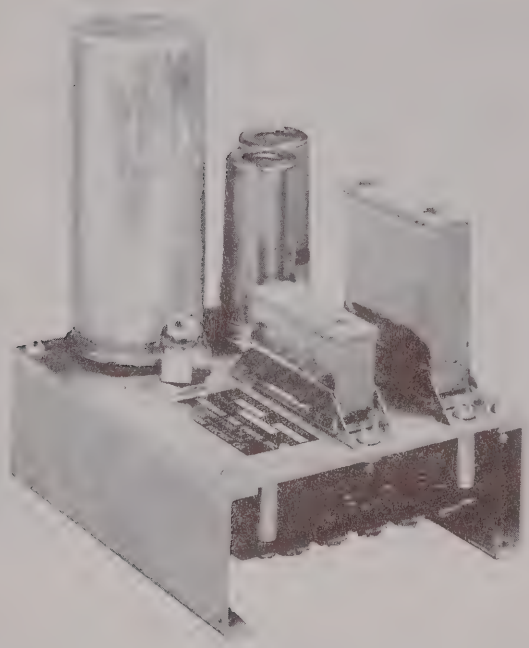
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Frequency Standard TS-65C/FMQ-1 (Export Packed)	1.6	12	11	21-1/2	40

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Frequency Standard TS-65C/FMQ-1	Metal	7CAC-170265-96513 7A889-65C	8-1/4	7-3/4	15-1/2	25
1	Cable Assembly			120 long			
1	Set of Spare Parts						

FREQUENCY STANDARD
Model 2001-2
(American Time Products, Inc.)



FUNCTIONAL DESCRIPTION:

A general purpose source of standard frequency designed to be integrated into basic equipment. A miniature tuning fork of bimetallic construction is electromagnetically driven and the pickup voltage is generated by the motion of both tines. The magnetic assembly of coils and magnets for both the pickup and driving coils is located between the two fork tines, along the dynamic center of the fork. The whole assembly is housed in a hermetically sealed and partially evacuated housing. This frequency standard is used in the A-3A Fire Control System.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The amplifier circuit consists of one pentode followed by a pentode connected as a triode. The high input impedance of the pentode input tube combined with negative feedback through a voltage sensitive element maintains the fork amplitude and frequency constant regardless of supply voltage variations, change of tubes, or tube ageing.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
	- Electronics Test Equipment - American Time 2001-2		

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FREQUENCY STANDARD
Model 2001-2
(American Time Products, Inc.)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: 6, 12, or 25 volts, AC or DC as specified. 100 volts DC to 325 volts DC at 5 milliamperes to 10 milliamperes.
Frequency Range: 200 to 2000 cycles per second in standard designs.
Accuracy: 1 part of 100,000 (0.001%).
Calibration: Adjustable frequency control over a range up to 100 parts in 1,000,000.
Temperature Coefficient: 1 part in 1,000,000 per centigrade degree from 0 to 60°C.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Time Products Inc., 580 Fifth Avenue, New York 36, New York.

TUBE COMPLEMENT:

2 JAN-6AU6.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	

FREQUENCY STANDARD
Part No. 2005
(American Time Products)

FUNCTIONAL DESCRIPTION:

This is a general purpose instrument designed to provide a source of commonly needed frequencies at a convenient power level and with a high order of accuracy. A miniature tuning fork of bimetallic construction is electromagnetically driven and the pickup voltage is generated by the motion of both tines. The magnetic assembly of coils and magnets for both the pickup and driving coils is located between the two fork tines, along the dynamic center of the fork. The whole assembly is housed in a hermetically sealed and partially evacuated housing. This isolates the fork from any barometric or altitude changes.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The amplifier circuit consists of one pentode followed by a pentode connected as a triode. The high input impedance of the pentode input tube combined with negative feedback through a voltage sensitive element maintains the fork amplitude and frequency constant regardless of supply voltage variations, change of tubes, or tube aging.

Power Supply: 110 to 125 volts, AC, 50 to 400 cycles per second, single-phase, 45 watts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-69439		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.2	
- Electronics Test Equipment - American Time 2005			

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U.S.A.

FREQUENCY STANDARD
Part No. 2005
(American Time Products)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Frequency Range: 60 cycles per second. (Other frequencies from 45 to 400 cycles per second available on special order)

Accuracy: 1 part in 100,000 (0.001%).

Calibration: Adjustable frequency control over a range up to 100 parts in 1,000,000.

Temperature Coefficient: 1 part in 1,000,000 per centigrade degree from 0 to 60 degrees centigrade.

MANUFACTURERS' OR CONTRACTORS' DATA:

American Time Products, Incorporated, 580 Fifth Avenue, New York 36, New York.

TUBE COMPLEMENT:

2 JAN-6AU6, 3 JAN-2D21.

REFERENCE DATA AND LITERATURE:

American Time Products, Incorporated, "Specifications and Operating Instructions for Frequency Standard Type 2005."

SHIPPING DATA:

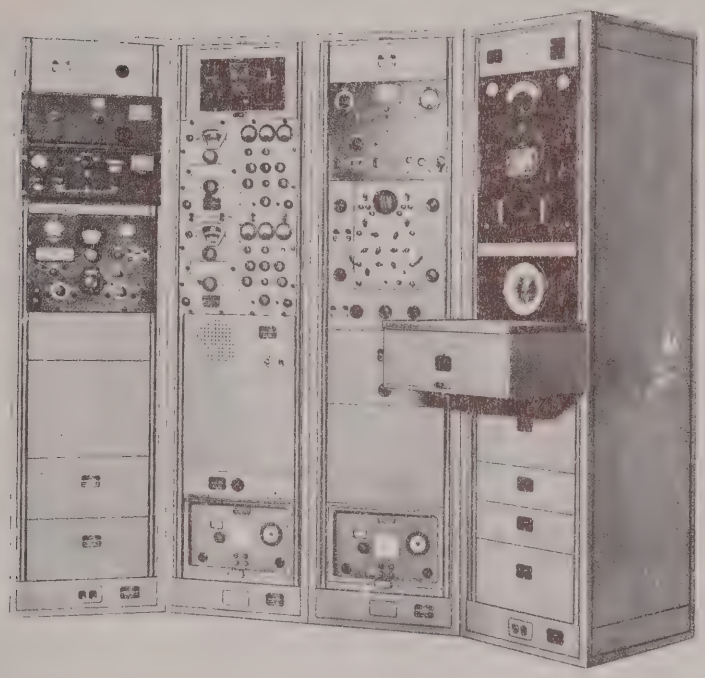
No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Frequency Standard (American Time 2005)		7CAC-69439	7-1/4	8	8	14

13.4 CALIBRATION EQUIPMENT FOR SIGNAL GENERATING EQUIPMENT

FREQUENCY CALIBRATOR SET AN/FRM-3



FUNCTIONAL DESCRIPTION:

A general purpose equipment designed to make precision frequency measurements. The calibration of this standard may be checked against WWV transmissions or by comparison with Navy time signals.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Actual measurement of an unknown frequency is accomplished by comparison with harmonics of 9, 10, or 11 kilocycles per second. The latter signals are derived by converter circuits driven by the output of the RF oscillator. The comparison of the unknown and the harmonic is made by applying both signals to a receiver and then measuring, by means of an oscilloscope and a standard audio oscillator, the audio beat note produced by heterodyning the two signal frequencies. The frequency of the unknown signal is established by adding

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.	7CAC-170276-7	F16-Q-112101-200	3F2424.1-3
PROCUREM'T INFO.:	Spec. MIL-F-16179 dtd 1 April 1951		
PROCUREM'T COG.:	Navy	DESIGN COG.: Navy, BuShips	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.4	
	- Electronics Test Equipment -		AN/FRM-3

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

FREQUENCY CALIBRATOR SET AN/FRM-3

ELECTROMECHANICAL DESCRIPTION: (Continued)

(or subtracting) the audio difference frequency to (from) the known harmonic frequency.

Power Supply: 115 volts, AC, 50 to 60 cycles per second, single-phase, power factor 0.9; 900 watts standby, 1600 watts operating; 1600 watts heat dissipation.

Frequency Range: 15 kilocycles per second to 420 megacycles per second.

Tuning Band Ranges:

Radio Receiving Equipment: RBA, 15 to 600 kilocycles per second; RBB, 0.5 to 4.0 megacycles per second; RBC, 4 to 27 megacycles per second.

Radio Frequency Heads: RF-36/U, 15 to 125 megacycles per second; RF-37/U, 100 to 420 megacycles per second.

Frequency Data:

Control: Quartz crystal.

Stability: One part in ten million.

Receivers:

Type: TRF and superheterodyne.

Output: 0.5 watts into 600-ohm line.

Reception: A1, A2, and A3.

MANUFACTURERS' OR CONTRACTORS' DATA:

Reeves-Hoffman Corporation, Carlisle, Pennsylvania; Navy Contract No. NObsr-42472, dated 9 March 1951; Approximate Cost per Unit, $50,000.00.

TUBE COMPLEMENT:

4 JAN-6SA7, 5 JAN-6AH6, 2 JAN-12AU7, 1 JAN-6V6, 5 JAN-OA2, 3 JAN-OB2, 12 JAN-6B4G, 1 JAN-6J6, 5 JAN-6SN7, 12 JAN-6AC7, 3 JAN-12AX7, 3 JAN-6AQ5, 7 JAN-6AG7, 2 JAN-6J4, 6 JAN-5U4G, 3 JAN-6AL5.

REFERENCE DATA AND LITERATURE:

NAVSHIPS 91320 (A) (Instruction Book).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Over-all Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Frequency Calibrator Set AN/FRM-3 (Shipped in 20 crates)	350				5168

FREQUENCY CALIBRATOR SET AN/FRM-3

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches) H	W	D	Weight (Lbs.)
1	Frequency Calibrator Set AN/FRM-3		7CAC-170276-7 F16-Q-112101-200 3F2424.1-3				
	Including:						
2	RF Amplifier AM-407/FRM-3		N16-A-33502-1101	4-3/4	5-15/16	3	1 each
1	Switch Panel SA-218/FRM-3			3-1/2	19	3	4
1	Frequency Converter CV-122/FRM-3		N16-C-90811-1501	6-13/16	19	6-7/8	10
1	Frequency Converter CV-119/FRM-3		N16-C-90797-1001	7-1/8	19	5-1/4	6
1	Frequency Converter CV-118/FRM-3		N16-C-90795-3501	8-1/8	19	10-1/2	15
1	RF Amplifier AM-406/FRM-3		N16-A-33502-1001	5-1/16	19	5-1/2	5.5
1	Mounting Switch MT-788/FRM-3			10-1/2	19	14-1/2	15
1	Frequency Converter CV-117/FRM-3		N16-C-90795-1001	7	19	10-1/2	14
1	Frequency Converter CV-120/FRM-3		N16-C-90782-1001	11-3/4	19	5-1/4	8
1	Distribution Panel J-361/FRM-3		N17-C-74598-2101	3-7/8	19	5-1/4	3
1	Switch Assembly SA-217/FRM-3			15-3/4	19	4-1/4	6

(Continued)

FREQUENCY CALIBRATOR SET AN/FRM-3

EQUIPMENT SUPPLIED: (Continued)

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches) H	W	D	Weight (Lbs.)
1	Amplifier Speaker AM-408/FRM-3		N16-A-27419-4001	8-3/4	19	8-3/16	8
3	Power Supply PP-555/FRM-3		N16-P-66971-1449	8-7/8	19	8-3/4	50 each
1	Distribution Panel J-375/FRM-3		N17-P-18151-2950	7-1/8	19	6-1/6	20
1	Switch Panel SA-223/FRM-3			5-1/4	19	2-1/4	1/5
1*	Radio Receiving Equipment RBA		F16-Q-246681-100	13-1/2	19	17-5/16	150
1*	Radio Receiving Equipment RBB		F16-Q-247401-100	28-3/16	19	20-1/8	150
1*	Radio Receiving Equipment RBC		F16-Q-427700-100	28-3/16	19	20-1/8	150
1*	Radio Frequency Head RF-36/U		N15-C-12161-100	8	20	9	25
1*	Radio Frequency Head RF-37/U		N16-A-39232-3251	7-1/2	19	6	25
1*	Cathode Ray Oscillograph Equipment OBT		F16-Q-206805-100	15-1/2	10-3/8	17	60
1*	Combined Heterodyne Frequency Meter & Crystal Controlled Calibration Equipment LR		F16-Q-16320-100	23	18	17-1/2	125

* Government furnished equipments, modified for use in the AN/FRM-3.

(Continued)

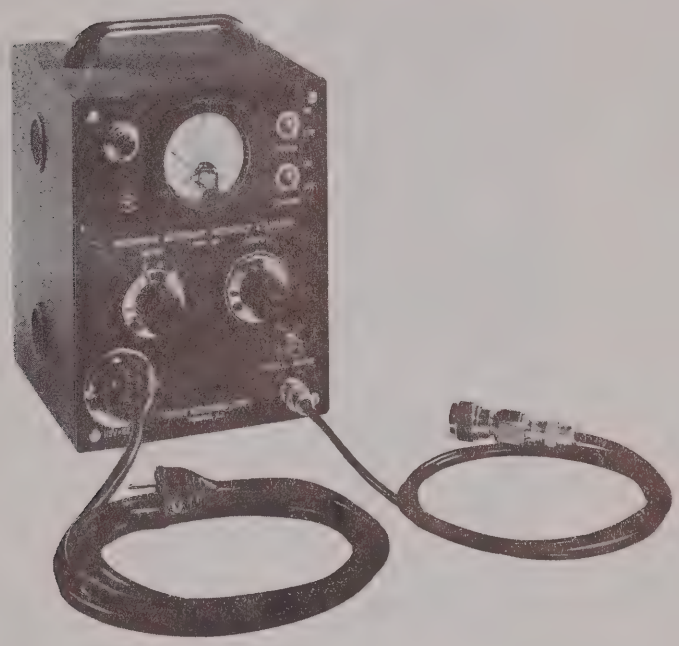
FREQUENCY CALIBRATOR SET AN/FRM-3

EQUIPMENT SUPPLIED: (Continued)

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Over-all Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1*	Clock TD-26/U		N16-C-69801-1102	8-3/4	19	11	
2	RF Oscillator O-76/U		F16-Q-189180-100	10-1/2	19	19	90 each
1*	Panoramic Radio Adapter RBV		F16-Q-256280-100	8-3/4	13-1/2	15	35
1*	Interpolation Oscillator CAG-35131			14	19	11-3/4	80
1	Control Panel C-694/FRM-3			1-3/4	19	1-3/4	1
4	Cabinet CY-597/G		N16-C-10639-2941	7	9	3	325 each
	Equipment Spares						

* Government furnished equipments, modified for use in the AN/FRM-3.

MICROWAVE SECONDARY FREQUENCY STANDARD
Model No. 100
(Presto Recording Corporation)



FUNCTIONAL DESCRIPTION:

A portable general purpose instrument that provides accurate test signals over a wide frequency range. These standard signals are used in the calibration of receivers and signal generators. When used in conjunction with standard microwave antennae, this equipment may be used to test radar or microwave installations.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: This equipment supplies a series of CW signals spaced every 100 and 200 megacycles per second over its frequency range, and a 50 megacycle per second marker output useful up to approximately 9,000 megacycles per second. Signal identification is accomplished by comparing the relative amplitudes.

Power Supply: 115 volts ±10%, AC, single-phase, 50 to 1750 cycles per second, 60 watts.

Frequency Range: 200 to 11,000 megacycles per second.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.4	
	- Electronics Test Equipment -		Presto 100

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

MICROWAVE SECONDARY FREQUENCY STANDARD
Model No. 100
(Presto Recording Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Type of Transmission: Continuous Wave.
Power Output: -10 dbm at 1,000 megacycles per second to approximately -55 dbm at 11,000 megacycles per second.
Output Impedance: Designed to operate into a typical 50-ohm receiver input.
Accuracy: ±0.005% of indicated frequency.

MANUFACTURERS' OR CONTRACTORS' DATA:

Presto Recording Corporation, P. O. Box 500, Paramus, New Jersey; Approximate Cost per Unit, $265.00.

TUBE COMPLEMENT:

1 JAN-12AU7, 1 JAN-6AK5, 1 JAN-5763, 1 JAN-5Y3GT, 1 JAN-1N23B.

REFERENCE DATA AND LITERATURE:

Manufacturer's Data.

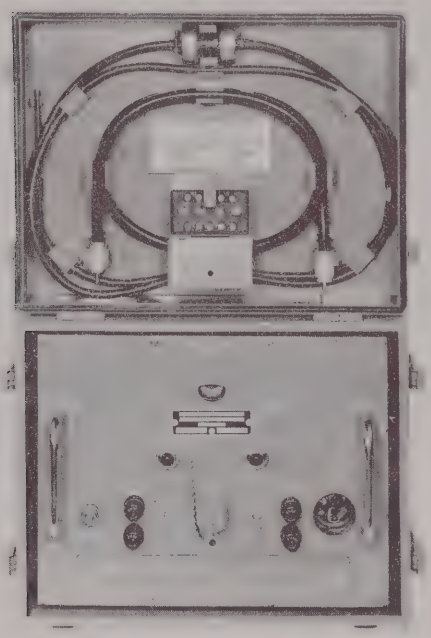
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Microwave Secondary Frequency Standard Presto Model No. 100			7-3/8	6	6	8.5

RANGE CALIBRATOR
Part No. T-101005
(Sperry Gyroscope Company)



FUNCTIONAL DESCRIPTION:

A portable secondary frequency standard which provides a means for checking and calibrating the frequency of the signal output of sine wave generators. Provision is included for both visual and aural comparison of the standard output frequency with that of the sine wave generator.

RELATIONSHIP TO OTHER EQUIPMENT:

FUNCTIONAL DESCRIPTION:

Circuit Information: A crystal oscillator generates the basic signal. The signal is passed through an isolation stage in order to stabilize the frequency. The isolation stage is coupled to the mixer stage where the oscillator signal is combined with the output signal from the sine wave generator under test. The calibrator beats a signal of known frequency against the signal from the sine wave generator. The difference in frequency of the two signals is indicated visibly on a cathode beat frequency indicator and audibly by means of earphones plugged into the circuit.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-170276-2		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.4	
	- Electronics Test Equipment -Sperry Pt. No. T-101005		

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

RANGE CALIBRATOR
Part No. T-101005
(Sperry Gyroscope Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Supply: 115 volts, AC, 400 cycles per second, single-phase.
Output Signal:
Basic Frequency Range: 163.882 kilocycles per second.
Type of Transmission: Pulse
Signal Amplitude: 10 to 20 volts.
Visual Monitoring: 0 to 10 cycles per second on cathode ray tube.
Aural Monitoring: 40 to 3000 cycles per second by earphone.
Operating Temperature (Internal): 75° C. (167° F.) thermostatically controlled.
Accuracy: ±0.5 cycle per second.

MANUFACTURERS' OR CONTRACTORS' DATA:
Sperry Gyroscope Company, Great Neck, Long Island, New York.

TUBE COMPLEMENT:
1 JAN-6E5, 1 JAN-6J5, 1 JAN-6AC7, 1 JAN-6SA7, 1 JAN-6SK7, 1 JAN-OD3/VR-150, 1 JAN-OC3/VR-105, 1 JAN-5Y3GT/G.

REFERENCE DATA AND LITERATURE:
TO 33D5-5-9-1 (Operation and Service Instructions).

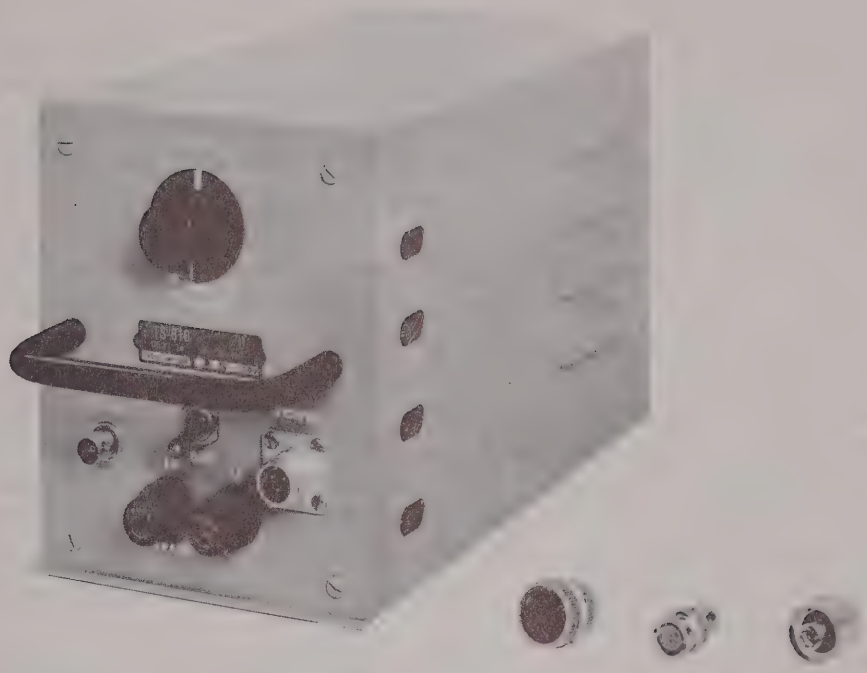
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Range Calibrator (Sperry Part No. T-101005)	Aluminum	7CAC-170276-2	12	15-1/2	10-1/2	25

CRYSTAL CALIBRATOR TS-810/U



FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument used to check equipments employing time bases or incorporating timing functions. It provides a high-frequency sine wave output and sharply-peaked pulse outputs at any one of five frequencies. These are used for sweep calibration of pulse analyzer groups such as AN/APA-74 to assure proper operation before installation in aircraft. It can be used for checking sweep linearity of oscilloscopes, for accurate calibration of sweeps, and for superposition of timing markers on the trace when making permanent photographic recordings. Signal generators and other instruments producing repetitive phenomena can be calibrated by a comparison of their output with the TS-810/U output on an oscilloscope. It can also be used as a time calibration source of greater accuracy than the built-in range calibrating circuits of radar sets.

RELATIONSHIP TO OTHER EQUIPMENT:

Similar to DuMont type 300 Time Calibrator.

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAC-170275-96295		
PROCUREM'T INFO.:			
PROCUREM'T COG.: USN		DESIGN COG.: USN, BuAer	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.8	
- Electronics Test Equipment -			TS-810/U

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

CRYSTAL CALIBRATOR TS 810/U

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The first stage of the circuit is connected as a modified Pierce-type crystal oscillator which produces an output of 1 megacycle per second. This frequency is applied to a blocking oscillator which operates at one-tenth the input frequency and provides an output signal of 100 kilocycles per second. Three succeeding blocking oscillators operate in a similar manner, each counting down by a factor of 10. A potentiometer is used in the grid circuit of each counter for adjustment of the time constants.

The output of each counter is taken from its cathode to the frequency-period selector switch. The selected frequency is applied to a pulse generator comprising a one-shot multivibrator and a "shock coil" to produce sharp pulses for calibration markers. The sudden change of voltage across the coil, caused by the flip-flop action of the tube, shocks the coil into oscillation. Negative excursions of the signal are clipped by a crystal diode in shunt with the coil. Sharp positive output pulses are applied to a cathode follower, which affords a method of isolating the load from the pulse generator and a method of controlling the output amplitude. In the event pulse stretching of the output pulses is desired, a back-of-panel switch connects a charging capacitor in shunt with the cathode resistor of the cathode follower.

The power supply circuitry includes a full wave rectifier for the B+ supply. B+ for the master oscillator and blocking oscillator counters is regulated by a gas diode. Heater voltage for the same tubes is regulated by a series-connected current regulating tube. Power is applied to the unit through a capacitance-filter type noise suppressor.

Power Supply: 115 volts ±10%, AC, 50 to 420 cycles per second, single-phase.

Calibration Pulses: 100 cycles to 1 megacycle per second, continuously variable.

Synchronization Signals: 100 cycles, 1 kilocycle, 10 kilocycles, and 100 kilocycles per second.

Sine Wave Output: 10 megacycles per second (0.1 microsecond).

Pulse Repetition Rate: 1, 10, 100, 1 K and 10 K microseconds.
Accuracy: ±0.01%.

Pulse Amplitude: 3 volts peak-to-peak positive; 30 volts peak-to-peak negative.

Pulse Width: Approximately 0.08 microsecond.

Impedance: 93 ohms.

Ambient Temperature Range: 0°C.(+32°F) to +55°C.(+131°F).

MANUFACTURERS' OR CONTRACTORS' DATA:

Allen B. DuMont Laboratories, Incorporated, 760 Bloomfield Avenue, Clifton, New Jersey; Navy Contract Nos. NOa(s)52-715c and NOa(s)54-852f; Approximate Cost per Unit, $225.00.

TUBE COMPLEMENT:

1 JAN-6AH6, 2 JAN-12AT7, 1 JAN-OA2, 1 JAN-6X4, 3 JAN-12AU7.

REFERENCE DATA AND LITERATURE:

CRYSTAL CALIBRATOR TS-810/U

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Crystal Calibrator TS-810/U		7CAC-170275-96295	7-1/2	5-1/2	11	7.5

550

13.8 CALIBRATION EQUIPMENT FOR TIME MEASURING AND COUNTING EQUIPMENT

552

13.10 CALIBRATION EQUIPMENT FOR MULTIFUNCTION TEST AND SUPPORT EQUIPMENT

554

PRECISION PHASEMETER
MODEL 901
(Maxson Instruments, Division of L. W. Maxson Corporation)

FUNCTIONAL DESCRIPTION:

A portable equipment used as a primary quality standard during phase measurements of electrical signals. The model 901 measures differences in phase angle by means of a detector bridge and 90-degree amplifier.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: Reference and unknown input signals of 0.5 to 10 volts rms are brought into the set through front panel jacks. The unknown signal is fed from a cathode follower to an amplifier that terminates in a phase detector bridge which consists of four semiconductor diodes arranged as a ring modulator. The reference signal passes from a separate cathode follower to a 90-degree amplifier which is followed by a precision calibrated potentiometer and phase-shifter circuit providing calibrated phase-shift control. Output in the

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.L.I.N.:		FUNCTIONAL CLASS. NO.: 13.10	
- Electronics Test Equipment -			Maxson 901

PRECISION PHASEMETER
MODEL 901
(Maxson Instruments, Division of L. W. Maxson Corporation)

ELECTROMECHANICAL DESCRIPTION: (Continued)

form of 180-degree split-phase signal in two parts is fed to an uncalibrated phase shifter. A variable resistor in this circuit selects the phase angle which exactly balances that of the unknown signal. After passing through a highly stabilized feedback amplifier the reference signal reaches the phase detector bridge. The bridge produces a null when its two input signals are in quadrature. A zero-center meter indicates null to the nearest 0.01 degree. A sensing circuit provides quadrant orientation. The unit is internally calibrated.

Power Supply: 105 to 125 volts, AC, 60 cycles per second, 2 amps.
Phasemeter Accuracy: 0.1 degree absolute.
Harmonic Content: 1% total.
Frequency Range: 30 to 20,000 cycles per second.
Input Impedance: 10 megohms shunted by 25 micromicrofarads.

Meter Ranges:
- Reference Level Meter: 0 to 10 volts AC.
- Unknown Level Meter: 0 to 10 volts AC.
- Degrees Meter: 1 to 0 to 1 ±0.01 degrees.
- Sense Meter: Indicates datum 0 or 180 degrees.
- Balance Meter: 0 to 10 volts AC.

MANUFACTURERS' OR CONTRACTORS' DATA:

Maxson Instruments, Division of L. W. Maxson Corporation, 47 37 Austell Place, Long Island 1, New York.

TUBE COMPLEMENT:

3 5651, 15 5751, 2 5814, 4 6216, 1 5U4, 6 6AU6, 8 12AT7, 1 12X4, 2 160-BHS, 4 1N211.

REFERENCE DATA AND LITERATURE:

Manufacturer's Instruction Manual.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Precision Phasemeter Maxson 901					

PRECISION PHASEMETER
MODEL 901
(Maxson Instruments, Division of L. W. Maxson Corporation)

EQUIPMENT SUPPLIED:

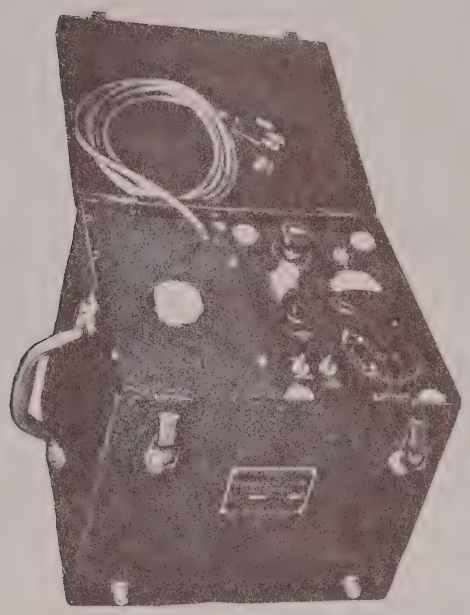
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Precision Phasemeter Maxson 901	metal		20	15-1/2	15	97
1	Power Cord						

558

13.11 CALIBRATION EQUIPMENT FOR ASSOCIATED DEVICES FOR ELECTRONICS TEST EQUIPMENT

560

VIBRATION PICKUP CALIBRATOR
MODEL NO. PC1
(MB Manufacturing Company, Inc.)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment used to calibrate vibration pickups by electronically comparing the output of the vibration pickup with that of its own calibrated signal source. Sensitivity of the pickup is indicated on a dial calibrated in millivolts per inch per second.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment contains an accurately calibrated signal generator, a null indicating circuit, an amplifier, an exciter and a power supply. The output of the vibration pickup is compared to the calibrated output of the internal standard signal generator by means of the null indicating circuit. A potentiometer is used to adjust the preset output of the standard signal generator until a zero indication is obtained on the null indicating meter. The sensitivity of the vibration pickup is then read directly on the calibrated dial of the potentiometer.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: USAF — DESIGN COG.: Commercial

F.I.I.N.: 6625-698-0286 — FUNCTIONAL CLASS. NO.: 13.11

VIBRATION PICKUP CALIBRATOR
MODEL NO. PC1
(MB Manufacturing Company, Inc.)

ELECTROMECHANICAL DESCRIPTION: (Continued)
Power Supply: 115 volts, AC, 50 to 60 cycles per second.
Testing Capabilities: Up to 10 ounces at 2.5 times gravitational force.
Sensitivity Range: 0 to 150 millivolts per inch per second.
Calibration Frequency: 60 cycles per second.
Sensitivity Accuracy: ±2 millivolts.

MANUFACTURERS' OR CONTRACTORS' DATA:
MB Manufacturing Company, Inc., 1060 State Street, New Haven 11, Connecticut.

TUBE COMPLEMENT:

REFERENCE DATA AND LITERATURE:
Manufacturers' catalog.

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Vibration Pick-up Calibrator MB PC1	Metal		10-7/8	13-1/4	10-5/8	30

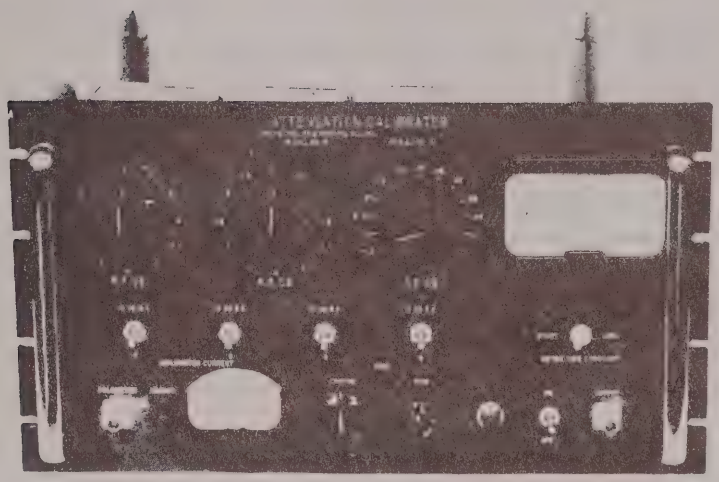
SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Vibration Pickup Calibrator MB PC1					

13.13 CALIBRATION EQUIPMENT FOR POWER MEASURING EQUIPMENT

564

ATTENUATION CALIBRATOR
MODEL BA-5
(Weinschel Engineering Company, Inc.)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment designed for measuring radio frequency power ratios in systems employing modulated radio frequency power sources and square-law radio frequency detectors. The equipment may be used for measurements of insertion loss and amplifier gain. A meter calibrated in decibels provides indications of the average signal voltage at the amplifier output. Calibrated switches indicate attenuation.

RELATIONSHIP TO OTHER EQUIPMENT:

A 200 ohm barretter is required but not supplied.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment consists of a precision 2000 ohm audio attenuator followed by a high-gain amplifier and variable time constant indicator. The 2000 ohm audio attenuator terminates an external 200 ohm barretter. Measurement inaccuracies due to amplifier non-linearity, characteristics are minimized

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard		
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: USAF — DESIGN COG.: Commercial

F.I.I.N.: 6625-614-0055 — FUNCTIONAL CLASS. NO.: 13.13

ATTENUATION CALIBRATOR
MODEL BA-5
(Weinschel Engineering Company, Inc.)

ELECTROMECHANICAL DESCRIPTION: (Continued)

by placing the audio attenuator ahead of the amplifier to allow the amplifier to operate at a fixed level during any one measurement. Varying the time constant indicator minimizes the effects of noise when using low radio frequency power levels or when measuring large attenuations.

Power Supply: 115 volts, AC, 60 cycles per second, single-phase, 190 volt-amps.
Attenuation Range: Variable 0 to 52 decibels RF using square-law detector.
Attenuator Accuracy: Better than ±0.02 decibel for 0 to 30 decibel power range.
Attenuator Resolution: ±0.002 decibel.
Amplifier Center Frequency: 1000 cycles per second ±3 cycles per second.
Amplifier Bandwidth: 35 cycles per second between the -3 decibel points.
Input Impedance: 2000 ohms.
Voltage Gain: 50×10^6 maximum, adjustable over 80 decibel audio frequency range.
Gain Variations: Less than ±0.1 decibel for line voltage variations between 105 to 130 volts.
Equivalent Noise: 30 millimicrovolts rms referred to the input when connected to a shielded 200 ohm wire-wound resistor.
Bolometer Bias Current: 0 to 10 milliamps DC from constant current supply.
Output Meter: 0 to 5 ±0.05 decibel.
Maximum Output Voltage to External Connector: 1.5 volt rms.
Output Impedance to External Connector: 250 ohms.
Load Impedance for Minimum Distortion: Greater than 10,000 ohms.

MANUFACTURERS' OR CONTRACTORS' DATA:

Weinschel Engineering Company, Inc., 10503 Metropolitan Avenue, Kensington, Maryland; Approximate Cost per Unit, $1350.00.

TUBE COMPLEMENT:

1 5V4, 3 6AU6, 3 5814, 3 1N34, 1 0C3, 1 6SJ7, 1 6SA7.

REFERENCE DATA AND LITERATURE:

Manufacturer's Catalog.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
1	Attenuation Calibrator Weinschel BA-5					85

ATTENUATION CALIBRATOR
MODEL BA-5
(Weinschel Engineering Company, Inc.)

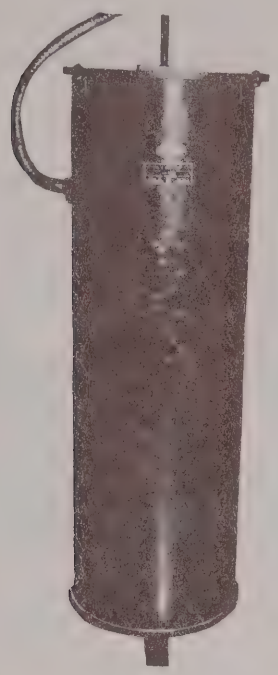
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Attenuation Calibrator Weinschel BA-5	Metal		10-1/2	19	13-1/2	35

13.14 CALIBRATION EQUIPMENT FOR TEMPERATURE MEASURING DEVICES

576

CHECKING FURNACE
MODEL 9003
(Leeds and Northrup Company)



FUNCTIONAL DESCRIPTION:

A nonportable, general purpose electric furnace used to provide a clean atmosphere and a uniform temperature throughout the interior working space during comparison tests between reference-standard and working-standard thermocouples.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The furnace consists of a distributed electrical-resistance heating element surrounding a cylindrical working space. The element is in an insulation sheath which maintains the outside surface of the furnace at a safe temperature. A line switch and rheostat arrangement provide voltage control. The rheostat permits continuous variation of the temperature throughout the entire range of operation.

Power Supply: 115 volts, AC, 60 cycles per second; or 115 volts, DC; 5 kilowatts.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Substitute Standard	
STOCK NOS.			
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.14	
- Electronics Test Equipment -Leeds and Northrup 9003			

CHECKING FURNACE
MODEL 9003
(Leeds and Northrup Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Operating Temperature Range: 300 to 1800°F corresponding to a power input of 40 to 1000 watts.

Accuracy: ±3°F.

Working Space Dimensions: 36 inches by 4 inches diameter.

MANUFACTURERS' OR CONTRACTORS' DATA:

Leeds and Northrup Company, 4901 Stenton Avenue, Philadelphia 44, Pennsylvania; Approximate Cost per Unit, $389.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

Manufacturer's Data Sheet E-33(1) and Catalog EF22-33(1).

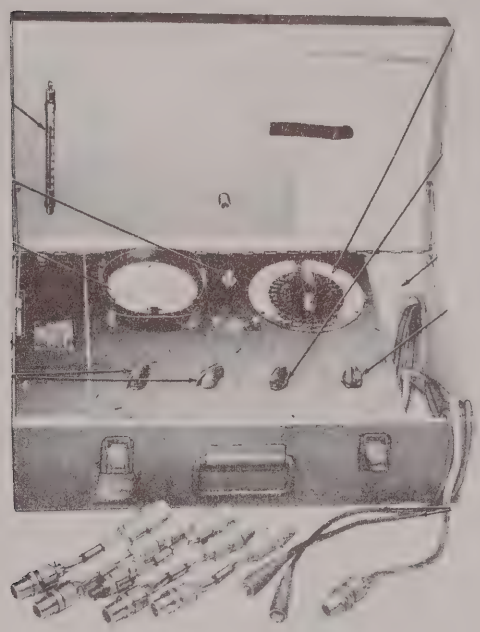
EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Checking Furnace Leeds and Northrup 9003	Steel		57	4-1/2 dia.		

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Checking Furnace Leeds and Northrup 9003					

ELECTRICAL THERMOMETER TESTER
MODEL 81T26A
(Lewis Engineering Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose precision standard used to check scale errors and calibrate aircraft thermocouple thermometers having an external resistance of 2 or 8 ohms and electrical-resistance thermometers. A meter located on the front panel of the equipment indicates the voltage applied when testing electrical-resistance type thermometers and indicates the correct current setting when testing thermocouple types. A selector switch indicates the preset values of temperature for the thermometer under test. A liquid-in-glass thermometer located on the hinged cover indicates ambient temperature during thermocouple thermometer tests.

RELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Electrical Thermometer Tester Lewis 81T25 and 81TT9.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The equipment consists essentially of a voltmeter, rheostats, switching circuits and a battery power supply. During electrical-re-

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.	Standard	Standard	
STOCK NOS.		(ASO)R88TO855-230-000	
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.14	

ELECTRICAL THERMOMETER TESTER
MODEL 81T26A
(Lewis Engineering Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

sistance thermometer tests, calibrated resistors are connected into the bulb arm of the thermometer bridge circuit and cause the thermometer pointer to deflect to the temperature point selected.

Power Supply: One 1.5 volt battery, one 45 volt battery.
Meter Sensitivity: 1 milliamp for full scale deflection.
Meter Resistance: 100 ohms.
Meter Accuracy: ±0.2%.
Thermocouple Thermometer Calibration Ranges:
Iron-Constantine: -50°C to +350°C, at 10 points.
Copper-Constantine: -50°C to +350°C, at 10 points.
Chromel-Alumel: 0°C to +1000°C.
Electrical-Resistance Thermometer Calibration Ranges:
Thermometers Calibrated 90.38 ohms at Zero: 68.27 to 242.70 ohms, at 15 points.
Thermometers Calibrated 50 Ohms at Zero: 37.95 to 164.50 ohms, at 8 points.

MANUFACTURERS' OR CONTRACTORS' DATA:

Lewis Engineering Company, Naugatuck, Connecticut; Contract No. N383-47166A; Approximate Cost per Unit, $450.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

NavAer 17-15CE-502, Handbook of Overhaul Instructions.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Electrical Thermometer Tester, Lewis 81T26A					

ELECTRICAL THERMOMETER TESTER
MODEL 81T26A
(Lewis Engineering Company)

EQUIPMENT SUPPLIED:

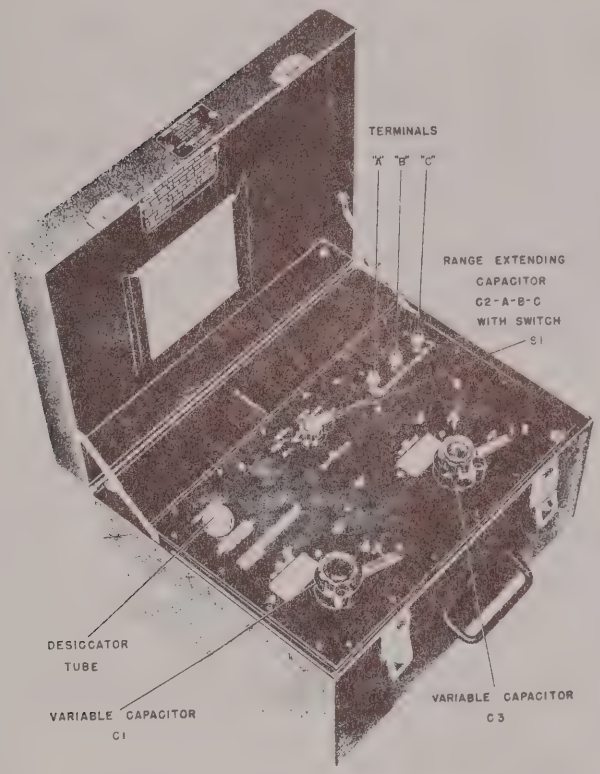
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Electrical Thermometer Tester, Lewis 81T26A						
5	Ratiometer Adapter						
1	Set, Test Leads						
1	Thermometer						

576

13.16 CALIBRATION EQUIPMENT FOR GAS AND/OR LIQUID MEASURING DEVICES

578

FUEL QUANTITY GAGE TESTER
Type No. MD-1
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose instrument designed to test and adjust capacitance-type fuel quantity indicating systems used in aircraft utilizing either jet or reciprocating engines.

RELATIONSHIP TO OTHER EQUIPMENT:

Replacement for Variable Capacitance Field Tester, Minneapolis-Honeywell HT 109B.

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The tester consists of two calibrator units. Unit one consists basically of a variable calibrated air capacitor, three fixed capacitors and a stepping switch. The switch and the three fixed capacitors are used to extend the range of the unit. Unit one simulates tank unit action corresponding to either compensated or uncompensated fuel gages. Unit two consists basically of a variable calibrated air capacitor used to simulate the compensator sensing

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.	7CAC-806250	(ASO)R88TO941-005-000	
PROCUREM'T INFO.:			
PROCUREM'T COG.: Navy		DESIGN COG.: Commercial	
		FUNCTIONAL CLASS. NO.: 13.16	
F.I.I.N.:			

FUEL QUANTITY GAGE TESTER
Type No. MD-1
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION: (Continued)

unit action corresponding to compensated fuel gages. The variable capacitors are attached mechanically and electrically to the panel and case which serves as a grounded shield. Each of the units has a spinner knob and dial locking arm located in front of a glass window on the front panel through which its main dial and vernier dial are visable. External connections to the tester are made through three keyed coaxial connectors located on the front panel. The instrument is furnished with nine connector cables, three tee adaptors and a correction chart. The instrument is equipped with a desiccator tube for moisture protection.

Power Supply: None.

Capacitor Range:

Variable Unit One: 50 to 1100 picofarads.
Variable Unit Two: 10 to 210 picofarads.
Variable and Fixed Unit One: 50 to 6100 picofarads.

Direct Reading Accuracy:

Variable Unit One: ±0.75 picofarad or 0.5% whichever is greater.
Fixed Unit One: ±0.5%.
Variable Unit Two: 0.5 picofarad or ±1.5% whichever is greater.

Chart Accuracy:

Variable Unit One: ±0.1% up scale.
Fixed Unit One: ±0.1%.
Variable Unit Two: ±0.2%.

Backlash: Less than 0.5 division or 0.01% full scale.
Maximum Voltage: 500 volts, AC.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts; Approximate Cost per Unit, $900.00.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

NavAer 17-15CF-508 Operation and Service Instructions; NavAer 17-15CF-509.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Fuel Quantity Gage Tester General Radio MD-1					

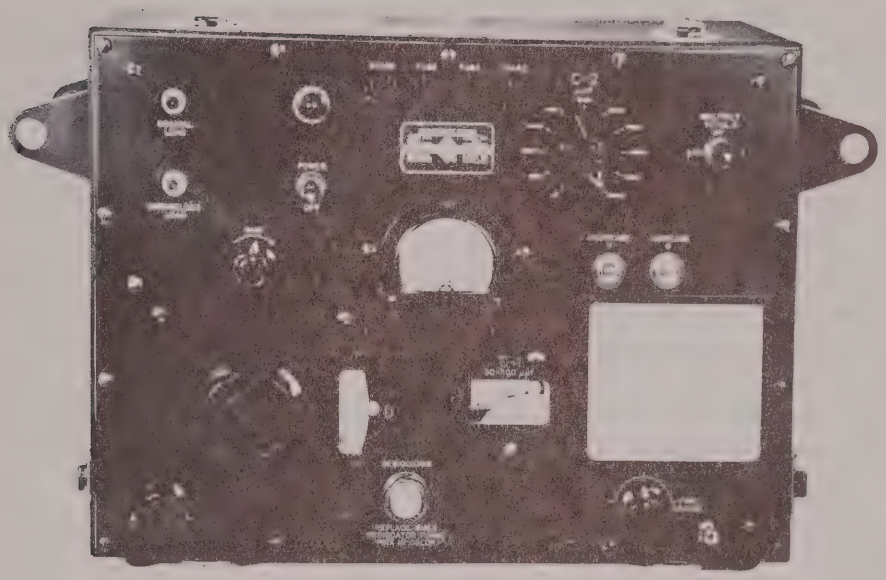
FUEL QUANTITY GAGE TESTER
Type No. MD-1
(General Radio Company)

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Fuel Quantity Gage Tester General Radio MD-1	alu-min-um					
1	Cable Assembly AP-579-20			74-7/16 long			
1	Cable Assembly BP-579-21			76-7/16 long			
1	Cable Assembly CP-579-22			74-7/16 long			
1	Cable Assembly DP-579-23			4-3/16 long			
1	Cable Assembly EP-579-24			14-3/16 long			
1	Cable Assembly FP-579-25			14 long			
1	Cable Assembly GP-579-26			13-7/8 long			
1	Cable Assembly HP-579-27			13-7/8 long			
1	Cable Assembly IP-579-28			14-7/16 long			
2	T-Adapter UG-274A/U						
1	T-Adapter EA-5203R						

582

CAPACITANCE BRIDGE
Type P-582
(General Radio Company)



FUNCTIONAL DESCRIPTION:

A portable, general purpose equipment designed primarily to check the accuracy of fuel-gage testers such as the MD-1 and O-3 as well as fuel-gage tank units conforming to Specifications MIL-G-7817 and MIL-G-7818. The instrument may also be used for precision measurements of the capacitance and dissipation factor of 3 terminal capacitors. Test results are displayed as a value of capacitance on a selector switch in 1000 micromicrofarad increments, on a drum scale in 50 micromicrofarad increments, and on a geared disk in 0.5 micromicrofarad increments with an individual calibration chart for corrections to the final accuracy. The dissipation factor is read off a rotating disc calibrated every 0.0002 units. A microammeter indicates the bridge current, and panel indicator lamps signal INCREASE or DECREASE as the unknown value of capacitance is approached.

RELATIONSHIP TO OTHER EQUIPMENT:

	AIR FORCE	NAVY	ARMY
TYPE CLASS.		Standard	
STOCK NOS.			

PROCUREM'T INFO.:

PROCUREM'T COG.: Navy — DESIGN COG.: Commercial

F.I.I.N.: — FUNCTIONAL CLASS. NO.: 13.16

- Electronics Test Equipment - General Radio P-582

CAPACITANCE BRIDGE
Type P-582
(General Radio Company)

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The test set consists basically of a transformer-type capacitance bridge, a 400 cycle per second generator, and a visual null detector. The capacitance standards are a precision air capacitor and silvered-mica-dielectric decade capacitors. Dissipation factor is measured by means of a calibrated wire-wound potentiometer configuration.

Power Supply: 105 to 125 volts, AC, 50 to 60 cycles per second, 30 watts.

Capacitance Range: 5 micromicrofarads to 0.01 microfarad, ±1% or ±0.4 micromicrofarads, whichever is greater.

Dissipation Factor Range: 0 to 0.11 ±2% ±0.002.

Oscillator Frequency: 400 cycles per second ±0.25%.

Oscillator Output: 25 volts ±10%.

Oscillator Distortion: Less than 0.5%.

Detector System Sensitivity: X1 multiplier position, 10% meter deflection for 0.05 micromicrofarad change in capacitance; X0.1 multiplier position, 10% meter deflection for 0.005 micromicrofarad change in capacitance.

Detector Amplifier Sensitivity: 10% meter deflection for 10 microvolt input.

Detector Amplifier Selectivity: 56 decibels down at 800 cycles per second, 64 decibels down at 60 cycles per second.

Detector Amplifier and Bridge Transformer Selectivity: 50 decibels down at 800 cycles per second, 80 decibels down at 60 cycles per second.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Radio Company, Baker Avenue, West Concord, Massachusetts.

TUBE COMPLEMENT:

5 5751, 1 12AT7WA, 1 6X4WA.

REFERENCE DATA AND LITERATURE:

Manufacturer's Data Sheet.

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	
	Capacitance Bridge General Radio P-582					

CAPACITANCE BRIDGE
Type P-582
(General Radio Company)

EQUIPMENT SUPPLIED:

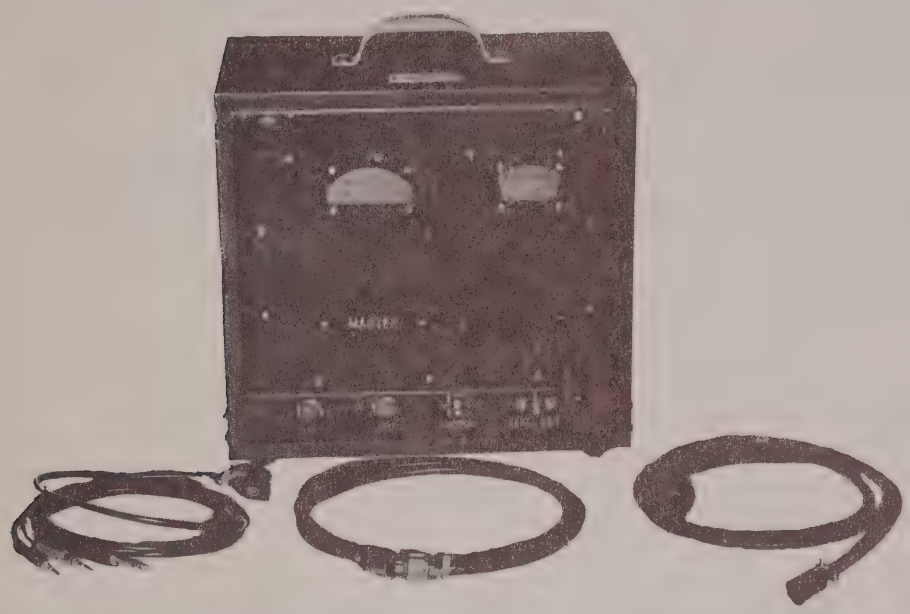
Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Capacitance Bridge General Radio P-582	metal		14	22-1/2	12-3/4	55
1	Power Cable						

586

13.17 CALIBRATION EQUIPMENT FOR KINEMATIC TEST AND MEASURING EQUIPMENT

588

GEAR BOX, MASTER
Part No. TSY-7133
(General Mills, Incorporated)



FUNCTIONAL DESCRIPTION:

This is a portable depot level instrument which is used to calibrate the various types of gear boxes of the Coordinate Converter Testers TSY-7049 and TSY-7107. It is also used to calibrate the polar and declination gear boxes and to zero the derotation synchros in the Control Box TSY-7115-27 of the Polar and Declination Synchro Zeroing Fixture TSY-7155 and of the Multiple Mirror Tracking Fixture TSY-7109.

RELATIONSHIP TO OTHER EQUIPMENT:

ELECTROMECHANICAL DESCRIPTION:

Circuit Information: The master gear box consists of two synchros geared together in a precision gear box. The gear train is driven by an internal servo motor which is controlled by means of a knob on the panel. Two dials on the panel indicate the coarse and fine amount of angular error of the equipment under test. The master gear box unit is electrically connected to the unit under test by means of a synchro cable and a servo motor cable.

(Continued)

	AIR FORCE	NAVY	ARMY
TYPE CLASS.			
STOCK NOS.	7CAD-400000		
PROCUREM'T INFO.:			
PROCUREM'T COG.:		DESIGN COG.: Commercial	
F.I.I.N.:		FUNCTIONAL CLASS. NO.: 13.17	
5t	- Electronics Test Equipment -General Mills TSY-7133		

This project was supported by the USAF on Contract AF 33(600)28276 and monitored by WADC, ARDC - Carl L. Frederick, Bethesda, Md. - Multilithed in U. S. A.

GEAR BOX, MASTER
Part No. TSY-7133
(General Mills, Incorporated)

ELECTROMECHANICAL DESCRIPTION: (Continued)

Power Supply: 115 volts, AC, 400 cycles per second (supplied by the unit under test). 28 volts, DC.

Coarse Dial Calibration: In 1.0 degree increments.

Fine Dial Calibration: In 0.01 degree increments.

MANUFACTURERS' OR CONTRACTORS' DATA:

General Mills, Incorporated, 400 Second Avenue, Minneapolis, Minnesota; Contract AF 33(038)14786.

TUBE COMPLEMENT:

None.

REFERENCE DATA AND LITERATURE:

TO 33D5-9-28-1 (Operation and Service Instructions).
TO 33D5-9-28-3 (Overhaul Instructions).
TO 33D5-9-28-4 (Parts Breakdown).

SHIPPING DATA:

No. of Boxes	Contents & Identification	Volume (Cu. Ft.)	Overall Dimensions (inches)			Weight Packed (Lbs.)
			H	W	D	

EQUIPMENT SUPPLIED:

Quant. Per Eq'pt	Name and Nomenclature	Case Mat'l	Stock Numbers (USAF) (Navy) (Army)	Overall Dimensions (inches)			Weight (Lbs.)
				H	W	D	
1	Gear Box, Master General Mills TSY-7133	Metal	7CAD-400,000				

591

592